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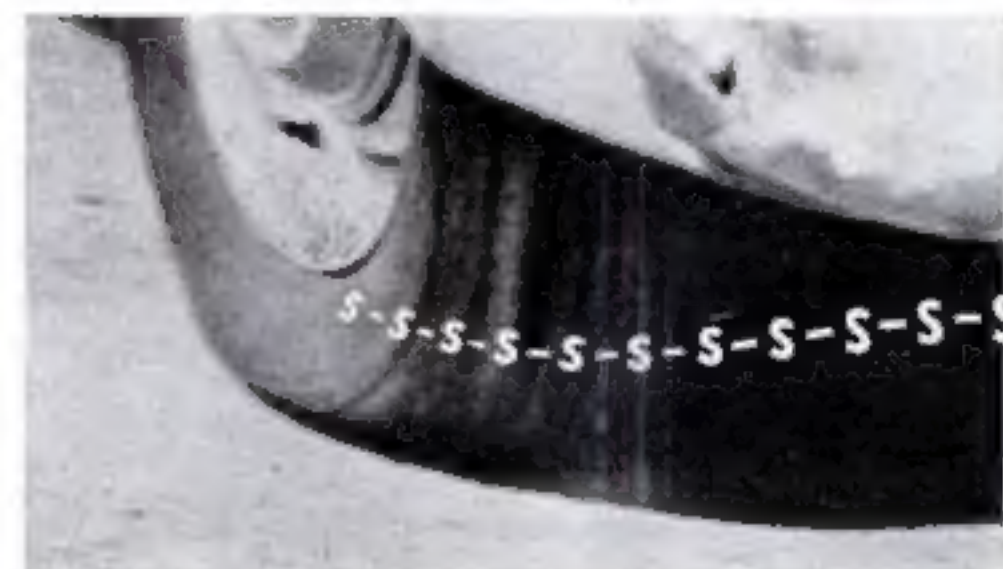
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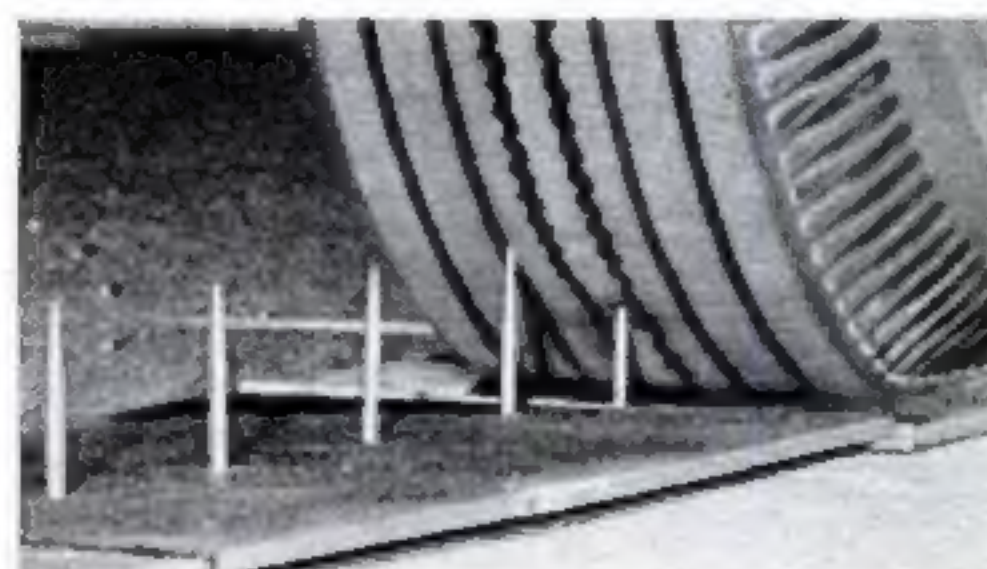


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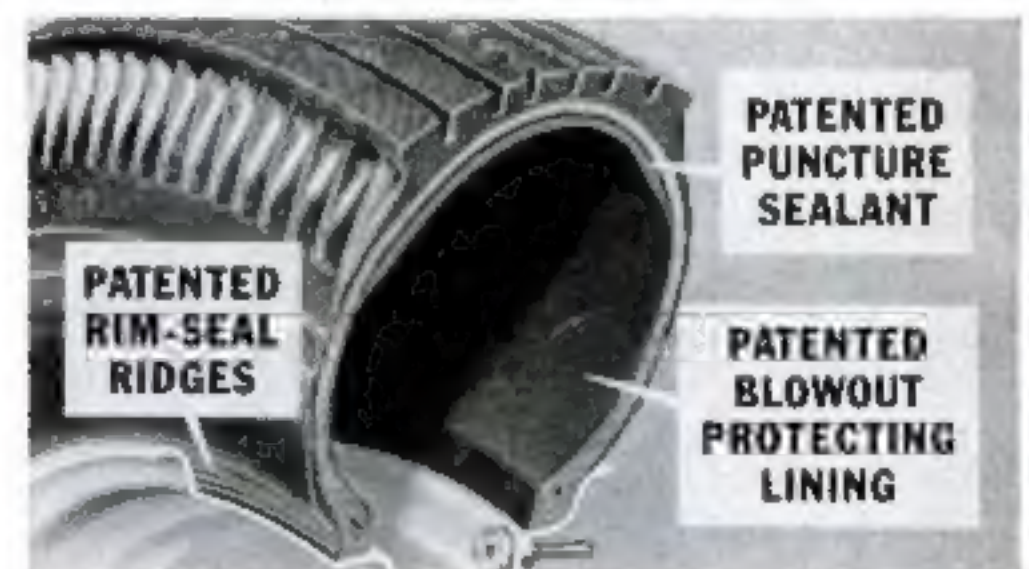
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AND WHAT WE SHOULD AND WILL DO

Vol. 36, No. 1

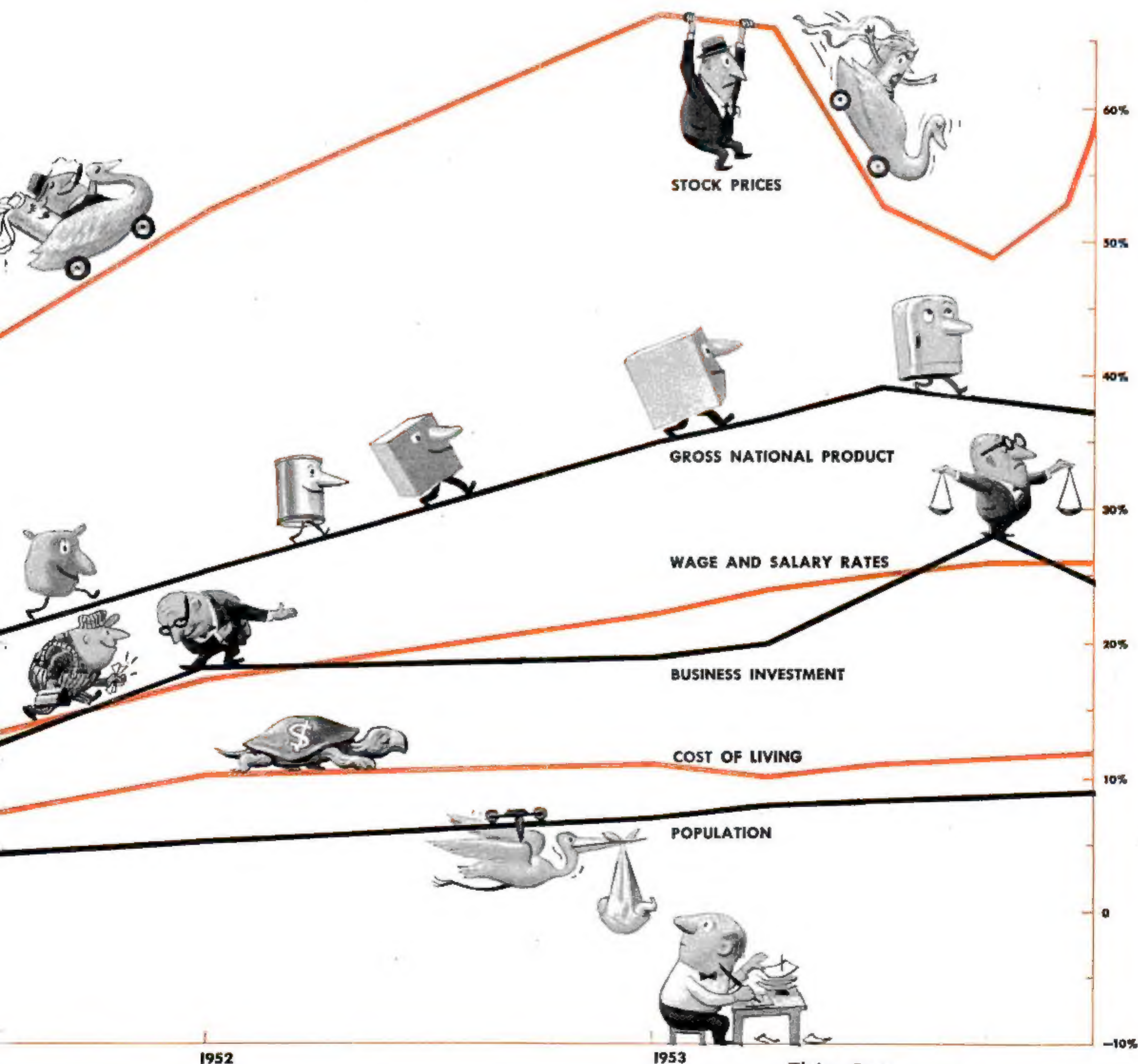
January 4, 1954

(the value of everything we make) and business investment, this shakiness is shown by dips at right. But most people did not pay much attention to the charts. Builders of roads, homes, office buildings and factories pulled off their biggest construction year. (We think it a record testament to their faith in America's future.)

But one thing we had not done adequately in 1953 was help the rest of the world get in better shape. We present a bold and specific plan (pp. 46-60) for accomplishing our major undone economic job: starting a free and profitable flow of international trade.

But where is the U.S. economy going? This we take up on pages 63-94. Maybe some of the doubting chart readers are right—but only in the short-term sense. Looking ahead 10 years, 25 years, there is nothing to hold us back. New technologies, new products mean a

bigger U.S. The predictions of George Russell Harrison (pp. 74-76) are important because the man who makes them is one of the most thoughtful scientists in the U.S. A big reason the U.S. is going to be the great country Dean Harrison foresees is the American talent for using energy. Each year we put more coal, oil, electricity to work. And when the coal and oil run low, the peaceful use of atomic energy—as President Eisenhower proposed to the Russians—and eventually the direct energy of the sun will power our country. But all this is no use without human insight and ingenuity. Here we are in good shape too. We end this issue with portraits of a mere 14 of the thousands of U.S. scientists who can put theory, glass, steel and electrons together, who can transmute elements and fashion electric brains, and are the men who can make all our dreams really work.



This One



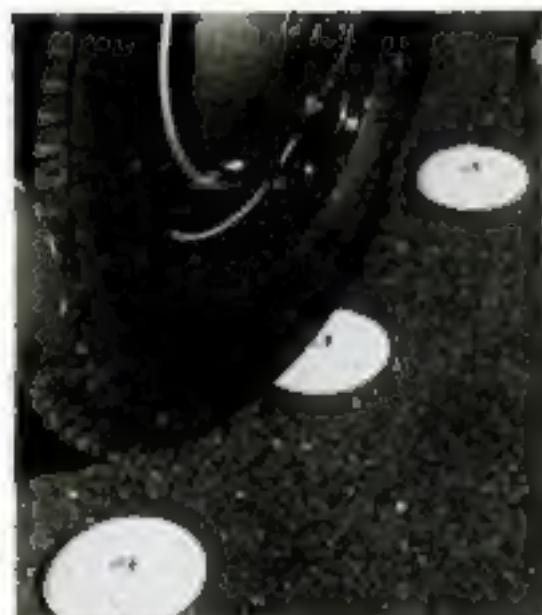
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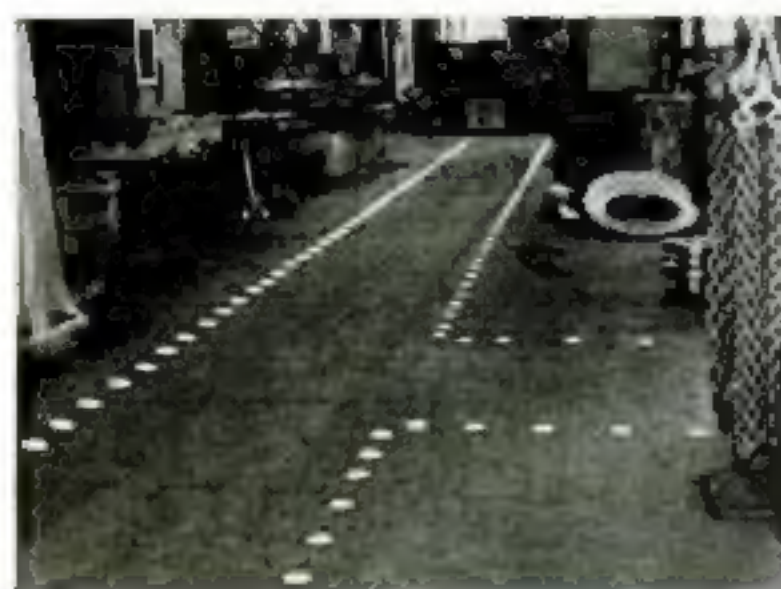
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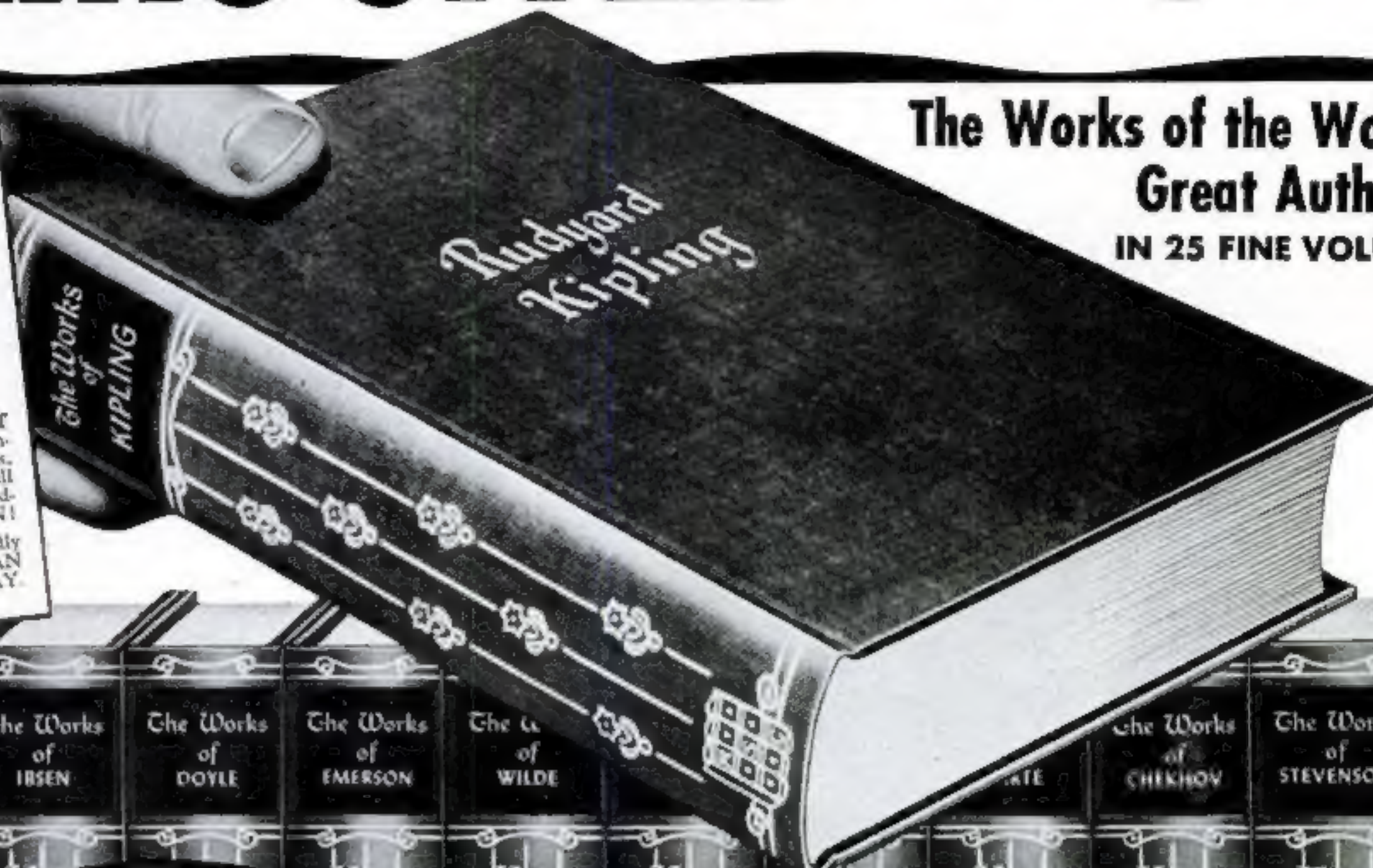
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LIFE

Vol. 36, No. 1

Jan. 4, 1954





RECTOR IN HIS OFFICE REFLECTS ON HIS 1953 SUCCESS

HIGHER INCOME AND MORE LUXURIES
IN THE BEST YEAR OF THEIR LIVES

THE BOOM TIME FAMILY PICTURE

What happened to the U.S. economy in 1953 is essentially what happened to William Rector, 41, an insurance salesman of Little Rock, Ark. Having had a prosperous year in 1952—like the U.S. itself—but guessing that business would level off in 1953, Billy Rector cautiously estimated his 1953 income would run something over \$30,000 and then started working hard to meet that figure. A few weeks ago he went over his agency's books (he is its managing partner) and was astonished at what he found: his income, figured at the usual profit level, had risen to a whopping \$49,000. Like the U.S. income it was the highest ever.

LIFE had been photographing the Rectors as part of a detailed, dollar-for-dollar documentation of the financial status of several U.S. families (following pages) whose incomes range upward from \$4,500. The camera caught Billy Rector as he celebrated his windfall in a characteristic American fashion (opposite page). Although he would plow much of the new income back into his business, he went out and bought a car. In so doing he summed up one of the healthiest things about the U.S. economy today: Americans are not only making more money than ever before—per capita income is up 8% from \$1,639 in 1952 to \$1,772 in 1953—but they are spending it, keeping the money in circulation. Though savings were up over 1952, the families whom LIFE interviewed, who were amazingly frank and cooperative, reported the purchase during the year of some luxury, something beyond ordinary needs which helped make 1953 for most of them, as for the rest of the U.S., the best economic year of their lives.

Since he sells all insurance except life, Billy Rector knew that his extra earnings in 1953 reflected the general prosperity of his community as much as his agency's hard work. Little Rock's businesses were expanding and could afford to take out larger policies. The Rectors already live comfortably—they have a \$35,000 house, two children (ages 11 and 5½), a full-time maid (\$1,040 a year) and three cars (one for business). They spend \$2,000 a year on clothes and \$450 on club memberships and save around \$4,000 annually—and so they would not expect to change their day-to-day habits (he estimates \$21,000 in taxes will have to be paid too). But in addition to the new car, the Rectors decided to begin work on a long-needed extension to their house (top, right), and Billy went out and bought his wife a very special Christmas present (bottom, right).



DUCK HUNTING gets him up at dawn. He is also enthusiastic fisherman, has \$1,000 in sports equipment.



HOUSE ADDITIONS, which will include making porch into playroom and den, are discussed with architect.



BIGGEST DEAL for Rector (left) was with construction company. Premiums on projects totaled \$125,000.



COUNTRY CLUB, where Eleanor (right) plays golf on average of once a week, costs the Rectors \$216 a year.



DIAMOND PIN was Christmas gift from Billy to wife. He started to buy diamond bracelet but liked pin better.



LUNCH IN THE KITCHEN at the Perryman's is made up mostly of big servings of cereal. Perryman children are Gregory, 3 (*left foreground*), and

Steven, 5 (*being served*). The other boys are David (*left*) and Frank Robertson, whom Tina Perryman watches for \$16 a week, \$8 of which goes for food.



NIGHTTIME JOB selling cutlery to augment his income has been undertaken by George since last October. He makes a 30% commission on cash sales,

25% on instalment sales. Here George shows his display set to Mr. and Mrs. Thurmon Crotts. They bought a trimming knife and a paring knife for \$10.



FAMILY OUTING gives George a chance to try out one of his model planes. Trips to competitions in 1953 cost \$275, miscellaneous materials, \$40.

1952 — \$4,200
1953 — \$5,850

A TIGHT SQUEEZE

With the raise in salary he earned as a drafting engineer at Lockheed Aircraft's Marietta, Ga. plant, George Perryman, 29, of Decatur, Ga. made \$5,600 in 1953 and added \$200 to this by selling cutlery in his spare time (*below, left*). His wife Tina added \$50 by taking care of a neighbor's children. Though this was more money than they had ever earned, the Perrymans still had a tough time making ends meet. There were the fixed expenses like food (\$1,200 for the year) and payments on their five-room house (\$748), and the Perrymans spent \$1,295 buying a car, which later required extensive repairs. Besides these there were medical expenses (\$95), church donations and appliance payments, in addition to taxes (\$726). But George kept up with his hobby of model airplanes (*above*), which took him to three out-of-state meets (including an expense-paid trip to Yugoslavia), and Tina was able to spend \$20 on new silverware (*below*). George and Tina Perryman are optimistic about 1954. "I think it will be better than ever," says George.



PERRYMAN LUXURY in 1953 was purchase of five silver table utensils for \$20.25 so that Tina could complete her silver set, a wedding present.

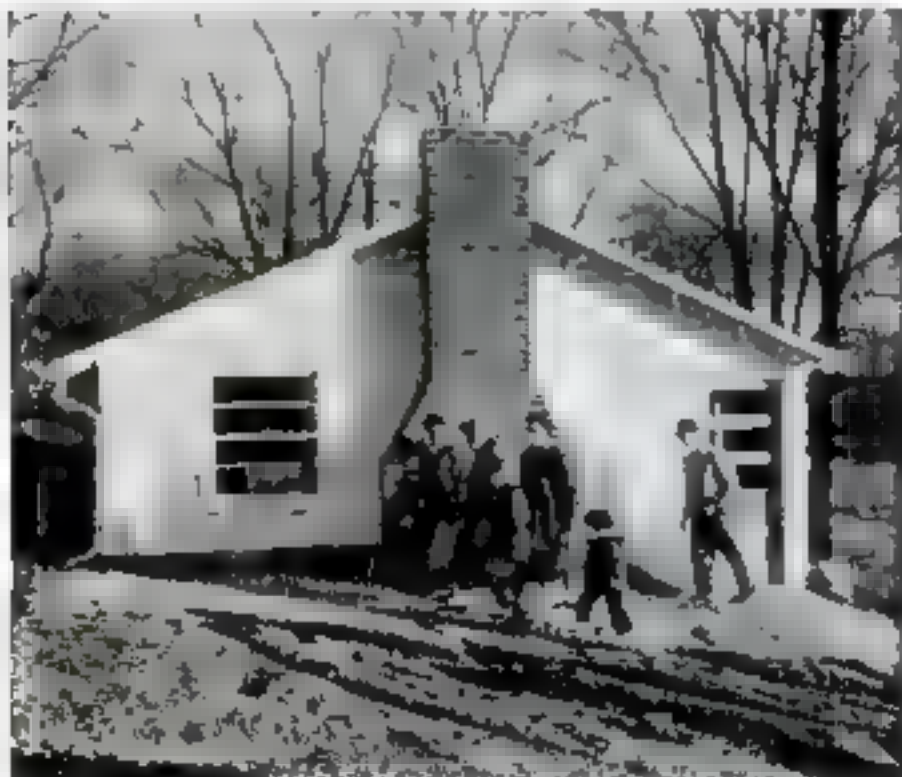


THE SIX BROWNS collect outside their house. In back row are Cherie, 19, Ray and Irene and Rita, 18. In front are Stephen, 2, and Susanne, 7.

1952	\$2,000
1953	\$4,500

A FILLED LARDER

Farmer Ray Brown, 43, of Aledo, Ill. made in 1953 less than four fifths of what George Perryman did (*opposite*), but his standard of living is immeasurably higher. His fixed expenses are far smaller. He owns his eight-room house. With meat and vegetables home-grown on his 200-acre hog farm, his food costs are only \$35 a month. Ray's hardworking wife Irene further shaves expenses by making more than half her daughters' clothes (*below, right*). His \$4,500 this past year, a decided improvement over a poor 1952 but still less than his wartime high of \$6,000, is contrary to the trend of U.S. farm income, which went down in 1953. Mr. Brown has sent his two older daughters to business college, is buying a 1953 Oldsmobile and has put \$960 into an annuity. Even so he had enough left over, augmented by past savings, to pay half the \$1,500 material costs for a trim little weekend cottage (*below*) he and his father-in-law built. Looking forward to 1954, Ray expects to make about the same as this year, but if he does not he will still be content.



BROWN LUXURY in 1953 was cabin at nearby lake put up in three weeks by Ray and his father-in-law. Ray hopes to finish off interior this winter.



FOOD IN THE CELLAR is kept in plentiful supply by Irene Brown, who is shown here with daughter Susanne getting meat from freezer. Irene puts up

hundreds of quarts of fruit and vegetables each summer. Freezer has cut their food bill 20%. The Browns have had meat an average of twice a day for years.



AFTERNOON CHORE for Irene Brown is sewing formal gowns for her two older daughters. Material for the two dresses cost only \$18, but dresses would

cost at least \$30 each if store-bought. Younger daughter Susanne now wears clothes made by Irene years ago for Cherie and Rita and carefully saved.



TRIP TO MARKET is a family affair with Tommy Waidmann carrying 4-month-old baby Brian while Gregory, 4, and Pamela, 6, propel the market basket

and Kevin, 2½. Waidmanns have meat almost every evening for dinner with fresh fruit or salad, too. But they eat dessert only two or three times a week.



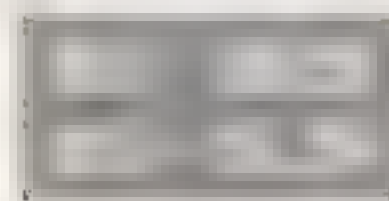
TRIP TO DOCTOR is a regular chore. Pediatrician here examines Brian, pronounces him in fine shape. In addition to doctors' fees, Waidmanns also

pay \$10.80 a year for \$1,000 endowment policy on daughter Pamela, which she can collect at 21. They plan to have same policies on other children too.

Families CONTINUED



BIG LUXURY for Waidmanns in 1953 was TV set, which they watch almost every evening. Other diversions are playing bridge and visiting friends.



CAREFUL BUDGET

By careful economizing the Henry Waidmanns of Denver, Colo., enjoy a pleasant, secure life on what to many Americans seems like the ultimate economic goal—a five-figure income. When Hank and Tommy were married in 1916 they owned virtually nothing. Hank went to work for Sawyer Brothers Inc. in 1916 at \$40 a week; today, at 36, he is an assistant sales manager and the Waidmanns, with four children, have a well-equipped six-room home.

They are still economizing rigorously, because food costs them an estimated \$2,300 a year; payments on the house come to \$865; clothes are \$7.25 a year (even though Tommy makes many of her children's clothes) and medical bills are coming to \$1,000 a year. Hank saves by taking his recreation at home and the Waidmanns rarely go out of an evening. They have built many of the improvements and extensions on their home themselves. In 1953 they made one financial splurge, buying a television set for \$369 cash. With his life centered on his children, Hank Waidmann looks forward to a still pleasanter and more secure 1954.



FUN FOR HANK is putting into cup at home. To pay \$1.25 for his child's in 1946; plays in summer on public courses for average of \$1.50 each day.

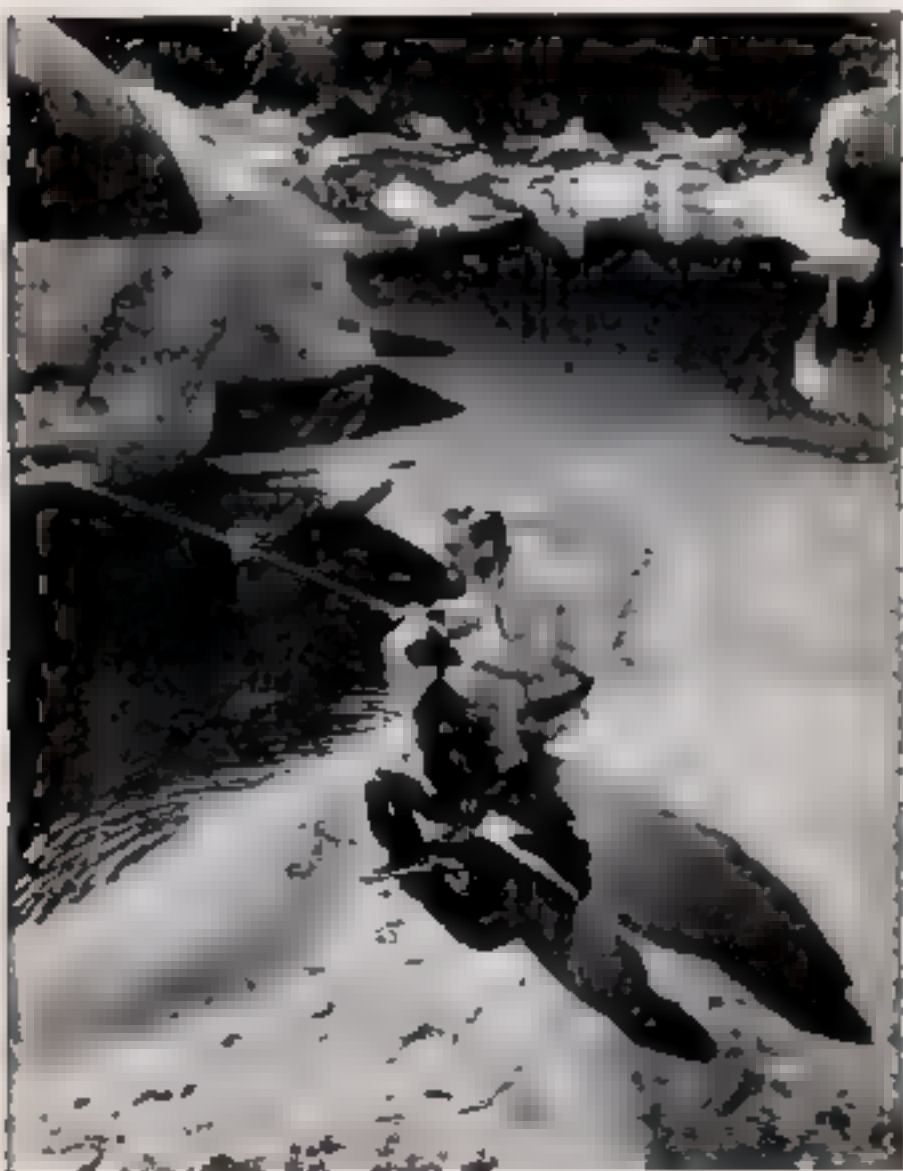


SPECIAL HOBBY for Buzz Waterman is building a speedboat in his backyard. He has spent \$800 on boat over the past two years. \$250 of it in 1953.



HAPPY SPENDING

In contrast to the stringently budgeted Waidmanns, the Frank Watermans of Bakersfield, Calif., cannot itemize their expenses exactly. The answer lies not only in the larger amount of money which "Buzz" Waterman makes with the agricultural chemical business which he began in 1947 but in the reduced expenses of living well in Bakersfield. Their house is no bigger than the Waidmann house and their annual food bill (\$2,100) is less. Their clothing bill came to \$600, but \$400 of this was for fabrics with which Betty Waterman made her own clothes. They have no full-time maid and their oldest boy, like most of the other son-of-age children in this article, goes to public school. With these comparatively modest expenses and with good but inexpensive fishing and skiing facilities not far from home, the Watermans can not only put \$4,000 of the \$26,000 this year back into Buzz's business but can afford some extra luxuries. As the big luxury in 1953, Buzz had a 20x40-foot swimming pool built and then, while he was about it, another 10x20-foot pool just for the kids.



FUN FOR BUZZ is fishing jaunt with son into nearby High Sierras. Watermans also own beach lot near Carmel, Calif., hope to build on it some day.

CRAIG, BUZZ, MARTHA, BRENT, BETTY BY POOL →





REACHING FOR ALTITUDE, F-100 bores almost straight up, its power-plant afterburner a flare of orange in the dusk. The newest of Air Force day fighters in production, this aircraft can out-speed sound in level flight.


LOOSING ITS ROCKETS, F-89D sweeps head on toward target. Flame-spit from pods on wing tip. Then rockets, each equal to 75-mm shell, form smoke trails and strike as plane pulls up. Direct hit smashed camera, left film unhurt. ➔



THE COSTLIEST THING OUR TAXES BUY

BILLIONS FOR DEFENSE

BUILD WONDROUS WEAPONS



There on the opposite page flames an estimated \$700,000 of the U.S. taxpayers' money, a man-made meteor, zenith bound. The aircraft is a North American F-100, latest descendant of the famous Sabrejet, and one of the manifold reasons why defense is the dearest thing a peace-loving U. S. buys in the richest year of its history, an expense that claims 60% of every tax dollar.

Altogether in this fiscal year, the country will spend around \$42 billion, a full 11% of the gross national product, in maintaining and adding to a military establishment whose replacement value already is reckoned at \$155 billion. Staggering sums are being spent around the globe, great hunks of dollars going to both conventional armament and mutual security support to our allies.

But by far the most spectacular spending is going into such powerful hardware as the F-100 and other aerial armament. One of the newest of these is Northrop's F-89D, an interceptor at Eglin Air Force Base, Fla. proving ground which, on this page, displays the unexampled bite of 104 rockets in salvo. Still others include Convair's supersecret F-102 which already, it is whispered, has broken the speed of sound going straight up. Others of the new weapons, some committed to air, some to sea, others to ground and distant polar icecaps, are shown on the following pages. All are as fearfully costly as they are devilishly fearsome.

KILLER WITH ELECTRONIC MIND



BATTERY OF NIKES point snouts at sky ready to fire. Men are checking wiring in mud boxlike extension of feet which support firing ramps. Raised

mechanically on ramps, Nikes are fired by remote control, get first lift from booster section in lower half below tail fins at nose and tail guide missile.

KILLERS, ONE SO SMART THAT IT DREAMS

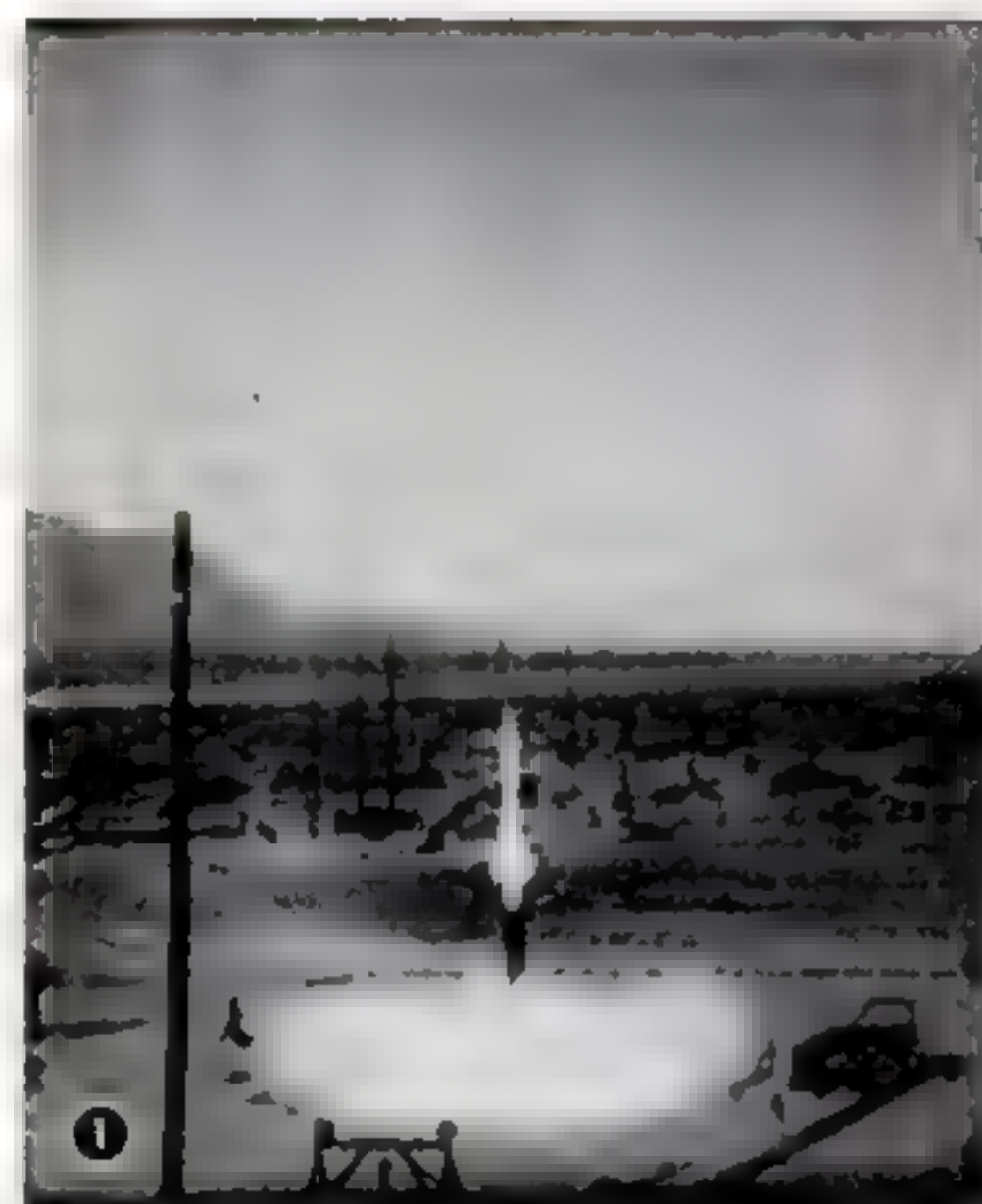
Radical as they are, the new airplanes—some of which are shown at the far right, still need men to pilot them. More exciting are the guided missiles on whose development and production the U.S. is spending \$500 million a year. The Navy is still perfecting Regulus (*lower right*), a jet automaton which can either destroy itself on target or return to base. The first missile to become operational—and being established at Fort Meade to protect Washington, D.C.—is Nike, a slender rocket as graceful as the

Greek goddess of victory for which it is named. Nike, priced at \$20,000 a shot, flies at about twice-sonic speed. Guided by interacting radars and an electronic brain, it goes to meet and even pursue its target with such devilish accuracy that one of its handlers says admiringly, "Nike not only thinks, she dreams." In the violent scenes at right, photographed from the ground by a radar-guided camera, Nike is shown going on its deadly one-way mission at the expense of an obsolete radio-piloted B-17.



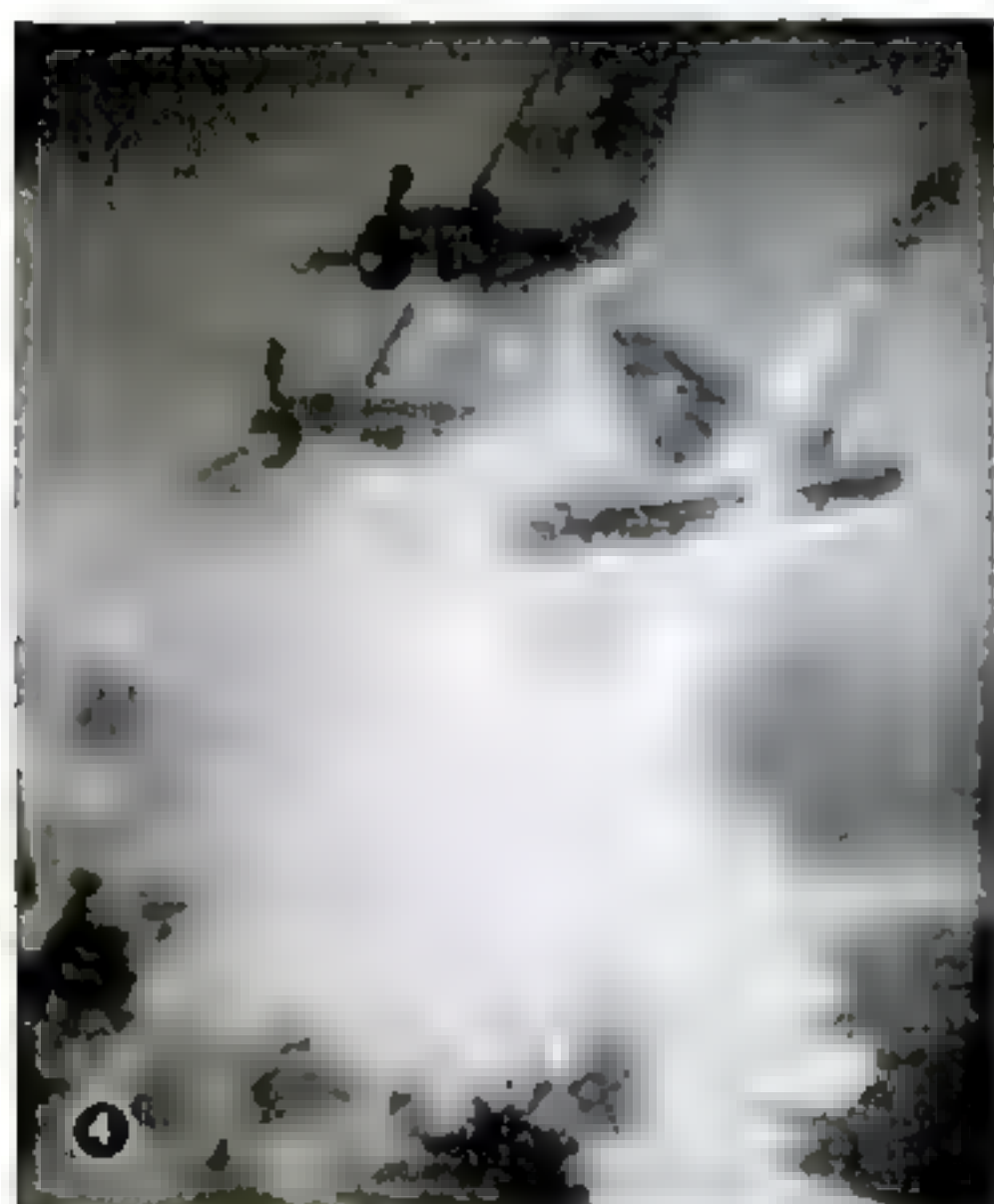
NIKE ON THE MOVE is carried toward launching site on a trailer towed by an Army truck, moving across the desert environs of the proving ground

in Red Canyon, N. Mex. This versatile missile, which is 20 feet in length and one foot thick, can also be transported by airplane when it is necessary.



NIKE'S MISSION begins (1) as booster rocket (dark lower portion) lifts it from ground. Within seconds its own rocket takes over (2) and it goes

KEEPS RENDEZVOUS WITH DEATH



to supersonic speed. "Brain" takes it to target (3), where the fuse explodes it (4) and plane disintegrates (5) with one engine flying off alone (6).



NAVY'S NEWEST and most potent aircraft fly wing to wing. Pie-shaped fighter (left) is Douglas Skyray, Navy's production delta wing and holder

of world's official speed record of 753 mph. With A-bomb toting capability, Douglas A3D (right) will furnish backbone of America's carrier striking force.



FLYING TEST TUBE, the X-3 built by Douglas, comes in for hot landing at Edwards Air Force Base, Calif. As long as a transport, weighing 13 tons, with

only 22 feet of wingspan, it was built to study the strains of supersonic flight. Within its needlelike nose it carries 1,200 pounds of test instruments.



PILOTLESS REGULUS, a Navy "flying bomb" built by Chance Vought, shows how it can return to safe, chute-braked landing with guidance of mother

ship. This guided missile also appears on cover, taking off with aid of boosters, simulating its automation's mission to seek and destroy an enemy target.



ONLY A FRACTION OF BOEING'S B-52 PRODUCTION FORCE, 1,600 EMPLOYEES SIT DOWN FOR LUNCH AT ONE TIME IN THE COMPANY'S SEATTLE PLANT CAFETERIA

A MAZE OF PARTS AND PEOPLE, A REVOLUTIONARY POWER PLANT

After money the vital elements of getting any major new weapon into production are vast amounts of time and huge numbers of people. Eight years ago the Air Force laid down its requirements for the B-52. Today only two test prototypes (*below*) of this mighty intercontinental bomber are flying. In Boeing's Seattle plant 11,720 employees are working on the

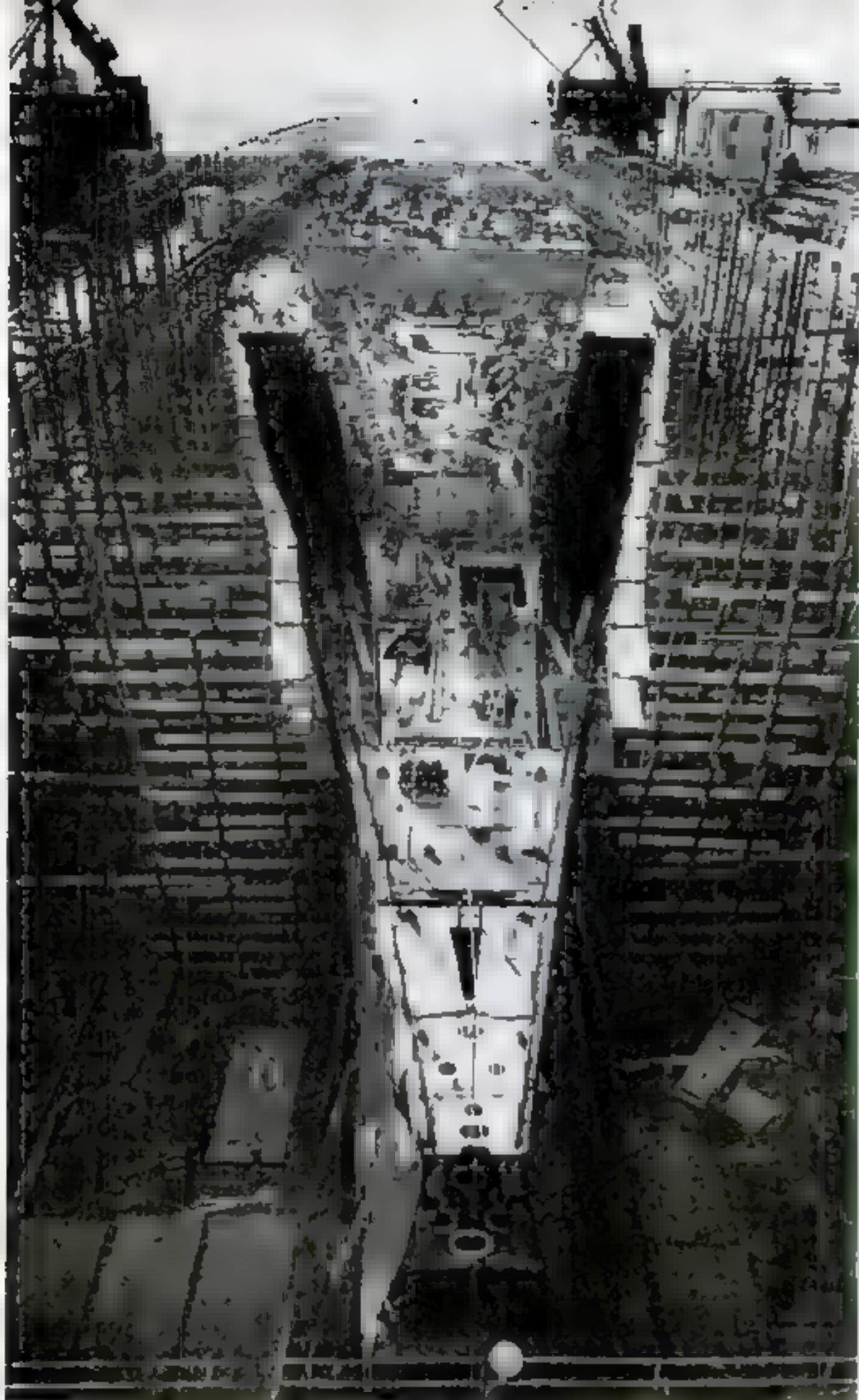
first production models, the earliest of which is expected to be done in March. Even this glacial progress represents excessive haste, for many testing steps were cut out in order to hasten tooling up and start on the big ships—so complex that each has 55 miles of electric wiring.

Development of the monster J-57 engine—so advanced that with less fuel it develops a third

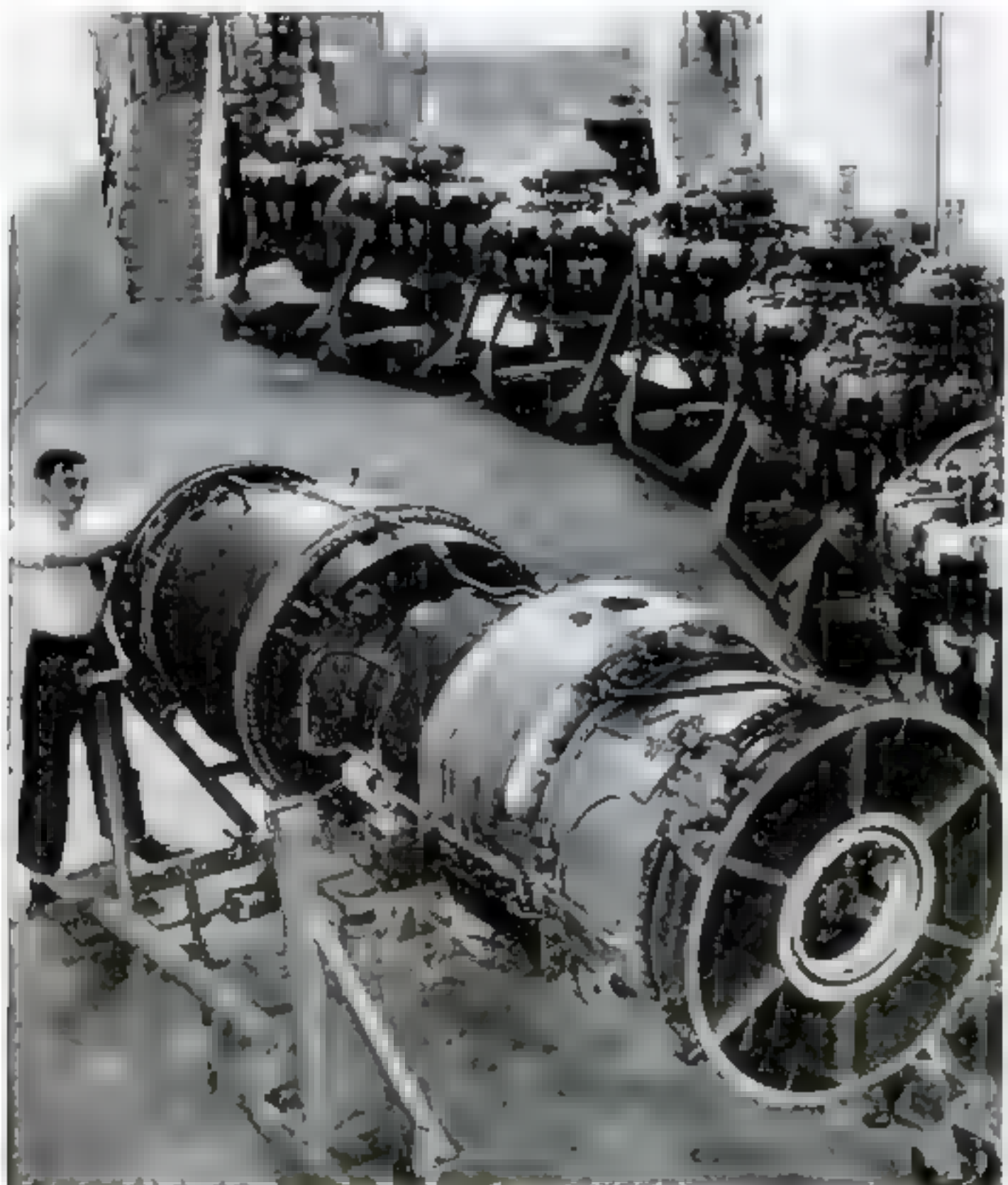
again as much power as the best previous jet, has been similarly deliberate. Its engine powers—or soon will—all the new aircraft shown on these pages (except the F-89D and the X-3) and can drive two to supersonic speed. Equally slow in being realized are such projects as the Navy's supercarriers. The *Forrestal*, cooking since 1946, will not be completed until 1955.

WHAT BOEING'S EMPLOYEES ARE WORKING ON IS SHOWN IN HIGH-TAILED B-52, COMING IN FOR LANDING WITH WHEELS AND FLAPS GROTESQUELY ADANGLE





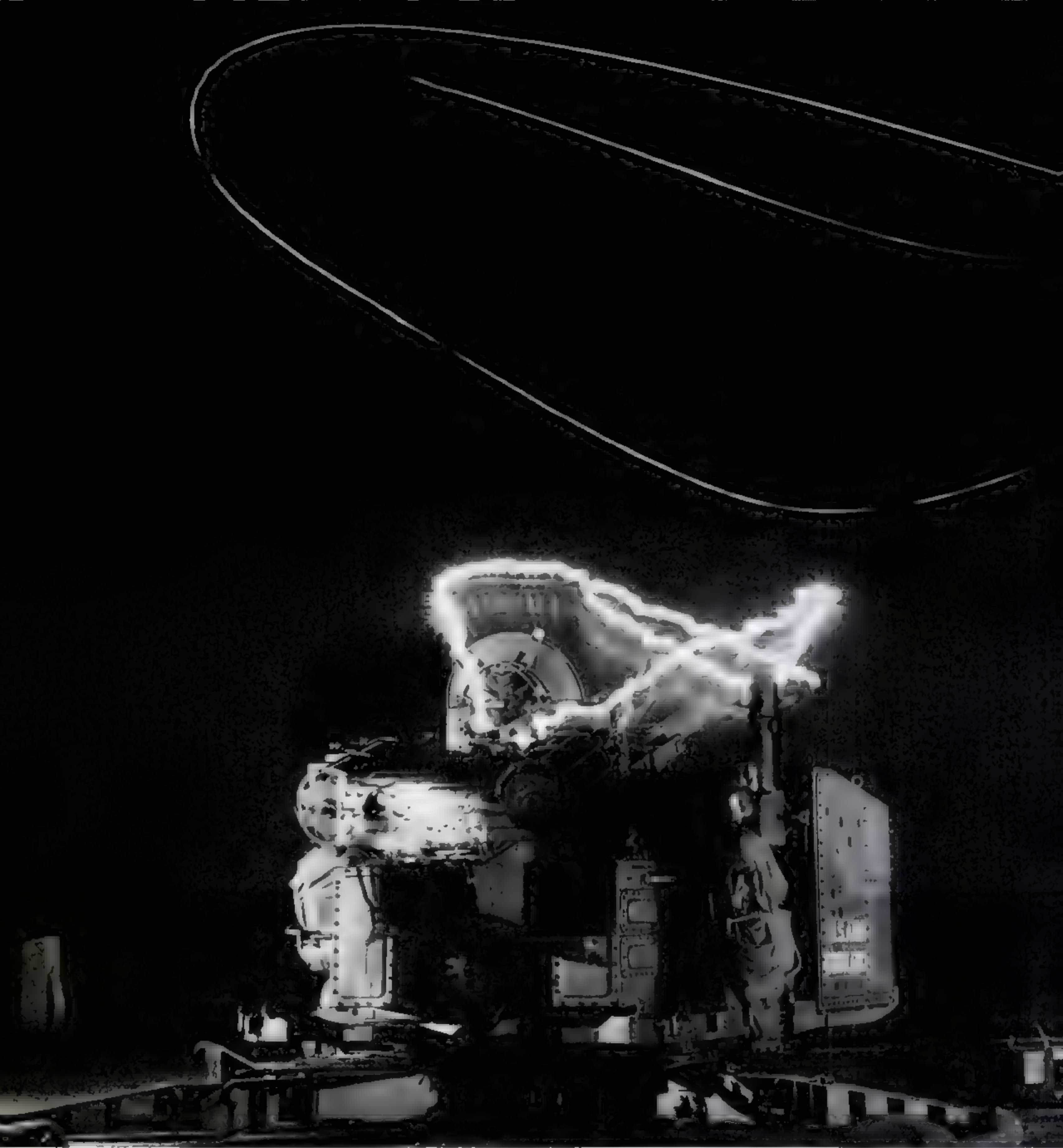
SUPER CARRIER begins to take shape in graving dock at Newport News. The first in a class of three, the U.S.S. *Forrestal* will cost \$218 million, will be the longest ship in the world (1,010 feet) and too wide of beam to use Panama Canal.



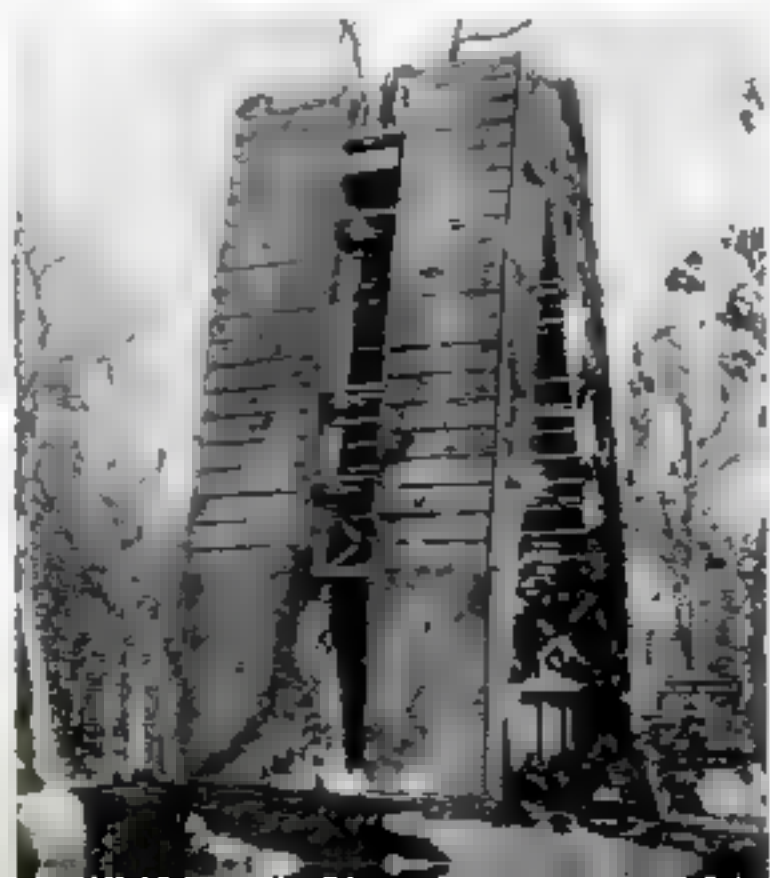
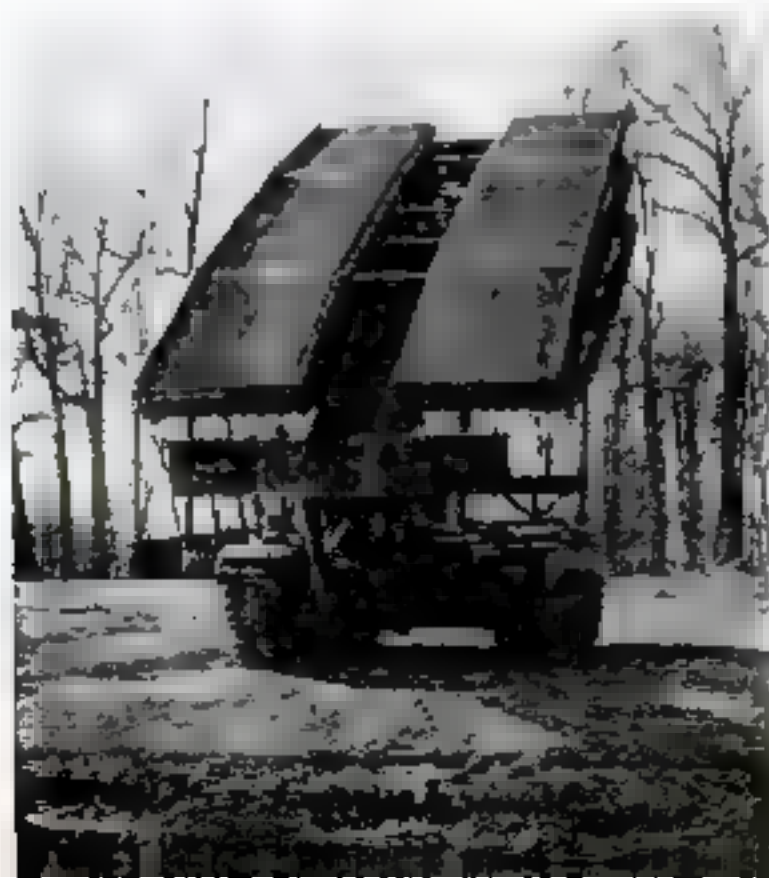
SUPER JET ENGINE, the J57 developed by Pratt & Whitney stands before seven conventional 2,400-hp engines whose combined power it equals. J57, which develops above 10,000-pounds thrust, reputedly costs about \$100,000 each.



TALL TAIL being manufactured for a B-52 intercontinental bomber stands upright in working jet. Technician working on tail (which runs through picture vertically) use stairway and three-story platforms to get at the gigantic panels.



BRIDGE-LAYING TANK MOVES UP BALANCING A FOLDED BRIDGE ON BACK. REACHING RAVINE, HYDRAULIC LAUNCHERS SHOOT JACKKNIFED SECTIONS UPRIGHT





← **SKYSWEEPER** is on top of every maneuver of target. Following illuminated bomber at 5,000 feet (upper trace), gun's own nervous gyrations are shown by light on muzzle.

SKYBORNE MARINES practice new strategy of massed helicopter assault. Here they drop on smudge-potted field at Camp Lejeune. Each craft ferries five combat-ready Marines.

NEW WEAPONS TURN GROUND FORCE EYES TO SKY

Although the emphasis of the military new look is on defense and retaliation in the air, there is still recognition of the old axiom that wars ultimately have to be fought in the dirt. Consequently, in the constant development drive of all services, some astonishing—and expensive—new tools are also showing up in the ground forces. Even here, however, there is a notable tendency to reflect the necessities of an air age. The most spectacular and surely the most marvelously agile of the new ground forces weapons is the Sky-sweeper, an antiaircraft gun designed to protect troops against medium- and low-flying aircraft. This gun, costing \$313,000 to build, is a piece of electronic wizardry which automatically tracks its target by radar while

spewing three-inch shells at the rate of 45 a minute.

Fresh from the lessons of Korea, the foot Marines are taking to the air in masses of helicopters. New tables of organization furnish 45 whirlybirds for each division, and all new Marines have to learn the technique of being transported by them. Indeed the helicopter has become such an indispensable arm of swift, flexible infantry movement that a new one, carrying 40 men, has already been built for the Air Force.

But, knowing that it must also be able to get to its objectives by land, the Army is not forgetting the wheels that carry it. To protect engineers working under fire, the Army spent \$250,000 to develop the ungainly tank shown below piggybacking its own bridge.

THEN, SEEMING TOO SMALL FOR BURDEN, TANK SCISSORS LIGHT ALUMINUM GIRDERS OVER THE GAP. FINALLY TANK CROSSES ON ITS OWN 80-FOOT BRIDGE



CONTINUED ON NEXT PAGE



INSIDE THE DOME technician checks over immense rotating radar antenna. Signals picked up by the antenna are transmitted by cable to radarscope at base camp. Information is then sent by radio to a control center elsewhere in Alaska.



ON THE WAY UP to dome, crossman muffled in fur robes cable car suspended between ice-sheathed towers. Lift to radar dome on peak rises 1,000 feet from the base camp below, can only be used when the wind is less than 30 miles an hour.



LONELY DOME crowns the mountain peak beside the ice-clad terminal of cable lift which brings up men and supplies. Men, who live in the squat

tower supporting the dome, spend a week at a time at the top and are rotated home, with credit for three years of overseas duty, after a single year.

A FRONTIER GUARDED BY A CURIOUS DOME

If war should come, the word that sets the defense machine in motion may be flashed from a weird black dome on an icy peak on the top of the world. Up there, in the wastes of Alaska, the Air Force is building a picket fence of powerful radar intended to give New York as much as six hours' warning of Russian bombers.

One such station, well north of the Arctic Circle, cost nearly \$6 million to build. Its heart is the great rotating antenna housed inside a pressurized plate of neoprene and Fiberglas, the only practical structure capable of protecting the antenna from sheath ice and the 100-mile winds which sometimes buffet the station for two weeks at a time.

For the men who guard its radar scopes 24 hours a day—and sometimes pick up Siberian-based Russian planes on them—life there is a grim that they call their secret location "Cape Hate." Going sometimes for months without glimpsing a new face, they relieve the loneliness by making pets of the white Arctic foxes.



A HALF-TAMED ARCTIC FOX VENTURES
NEAR DOME TO BEG FOOD FROM CREW
IN TWILIGHT OF AN ARCTIC MIDDAY

AS SEEN FROM WASHINGTON

SMALL DECLINE ON HORIZON

by GEORGE B. BOOKMAN

Financial Correspondent, TIME-LIFE Washington Bureau



PRESIDENT'S PROPHETS are Economists Burns (center), Walter Stewart (left) and Neil Jacoby. Possible decline in 1954 is not expected to exceed 10% at worst.

The lights have been burning late in Washington in the weeks just before the year's end. On desks heaped high with mountains of statistics, indices, graphs, slide rules and conversion tables, anonymous but important men and women have been performing an annual alchemy whereby paper is transmuted into an official crystal ball. These workers are the 3,000-odd government employees who pursue what Carlyle called the "dismal science" of economics. Their findings—sifted, weighed and winnowed again by chief economists and superchief economists—eventually reach the White House through the President's Council of Economic Advisers headed by Arthur F. Burns (above) and thus become the basis on which the President plans his future economic policies.

Like any other prophecy, the combined estimate of our government's economists may be wrong, but at least it is based on the informed guesses of experts who are as well informed as any government's in the world. Here is how they see the picture for 1954:

IS THE BOOM OVER? No, far from it. But it has definitely reached its peak in the all-time record year of 1953. After that peak, as with the men who climbed Everest, there was no place to go but down. And we are on our way.

How far down? Not very far, measured by any past standards of prosperity. Some of the most optimistic economists believe that the gross national product—the grand total of all goods and services—may even equal 1953's \$365 billion. Even the gloomiest ones foresee a drop of no more than 10%. If the pessimists are right, the output will just about match 1951's—the biggest in history up to then.

UNEMPLOYMENT, which is now close to the irreducible minimum at 1.5 million, may double in the coming months but is not expected to exceed 3 million. The unemployed totaled 4.5 million during 1949's recession, 12 million at the bottom of the Depression. With the growth in population, unemployment would have to rise to 18 million to equal, proportionately, the 1932 figure.

WAGES may go down a bit in actual take-home pay because of less overtime, and shorter work weeks in some industries.

COST OF LIVING may go down, too, so that smaller paychecks may buy just as much in goods. Stiffer competition is likely to force cheaper prices in a big list of goods. Bargains

in automobiles and appliances will be easier to find. Soft goods like clothing should be cheaper. Food may come down some more.

GROSS PROFITS cannot possibly match 1953's. The necessity of shaving prices, alone, is bound to trim them. However, the cost of many things business buys will also go down, easing the squeeze on profits. But most companies will still earn more than enough to meet their dividends, which in most cases have been substantially boosted in recent years. Death of the excess profits tax will enable some corporations to suffer as much as a one third drop in sales without reducing their profit rate of 1953.

TAX CUTS for everybody will help bolster buying power. The Korean emergency's 10% boost in income taxes dies along with EPT. Moreover, the very high level of consumer savings—now in excess of \$25 billion—provides a cushion for plenty of buying and brisk retail sales for every merchant who knows how to do a good job of selling.

More tax cuts are promised as soon as the budget can stand it. On the President's list for eventual adoption are bigger medical deductions, special deductions for working wives (e.g., what they spend for baby sitters), partial exemption of income from dividends, more liberal deductions for firms that buy new plants and tools, and permission for companies to retain more profits without tax penalties. The excise-tax crazy quilt will be reformed. The corporate tax rate will have to be kept at present 52% until the deficit eases.

BUILDING, a mainstay of the boom, will see little if any fall from its present record levels. Home builders expect another 1,000,000-home year (the all-time pre-boom peak was 729,000 in 1925) for the fifth year in a row. Smaller federal construction will be offset by increased state and local building.

FARMERS probably will not recover fully from the income loss they have suffered during the past two years. Their costs for machinery will go down, but their cash returns may drop again too. Secretary Benson is working on special programs for each major crop, including "two-price" plans for some, flexible supports for others, and even a sort of Brannan-type direct subsidy payment to wool growers. He will seek to replace the rigid 90% of parity price supports with more flexible ones in the hope of avoiding surpluses.

UNIONS will find concessions made to them in mild amendments to the Taft-Hartley Act, if Eisenhower has his way. But other amendments may give greater recognition to state labor laws which give union-troubled employers quicker and stronger relief. The President will try to raise the 75¢-an-hour minimum wage and liberalize unemployment benefits.

THE BUDGET will be trimmed about \$5 billion, to \$67 billion. The cash budget, which includes Social Security and other special funds, will be nearly balanced, but the regular budget which excludes these funds will probably show a deficit of about \$3 billion because of the \$3.5 billion in tax cuts. Hence, Congress will be asked to raise the debt ceiling from \$375 billion to \$390 billion. Since defense spending cuts will be limited to 10%, rearmament will still provide a big impetus to the economy.

HOME LOANS will be easier to get under revised housing laws, especially for lower-priced houses, and on better terms. The Eisenhower program intends to keep home-building high to meet the needs of a rapidly growing population.

ANTI-DEPRESSION PLANNING by Administration includes plenty of stop-gap measures just in case the experts prove wrong and the expected moderate decline turns into a full-scale recession. On the shelf are \$15 billion of public-works projects, already blueprinted and approved by Congress, which can be quickly set in motion. Plans have been made to speed up state and local public-works projects, if need be by buying up their bond issues. The "tight money" policy, which has already been liberalized, would quickly be switched to fast expansion of credit by decreasing Federal Reserve margins, resuming the price-pegging of government bonds, and stimulating installment buying. Taxes would be cut still more, the building industry get special inducements to expand. The Republicans say they will spend money faster than the New Deal if they have to. But they don't think they will have to.

Summing up, the experts make no extravagant claims for the Eisenhower program. They do not claim it will produce a golden business boom. They do claim it will keep the economy stable, employment high, and the dollar from losing any more of its buying power. They think it will keep the business letdown from getting out of hand. Americans will get used to a half-forgotten fact: that business does not have to break all records to be very good.

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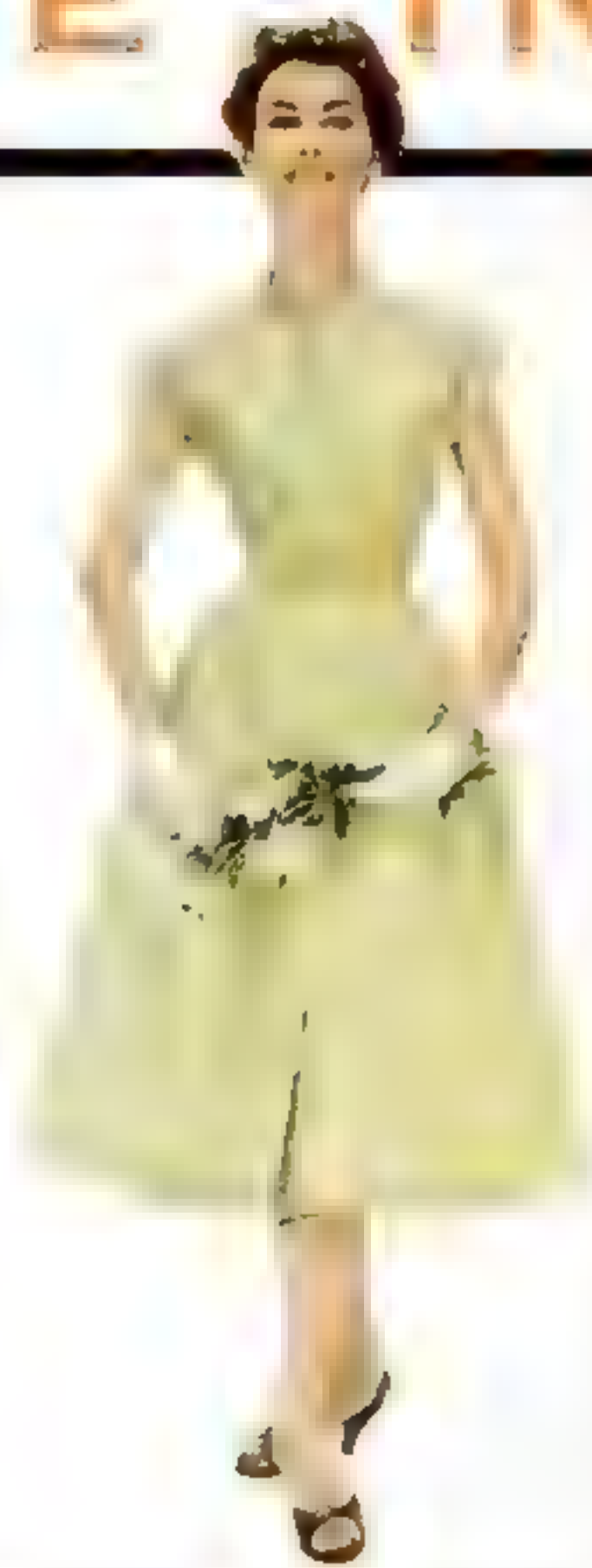
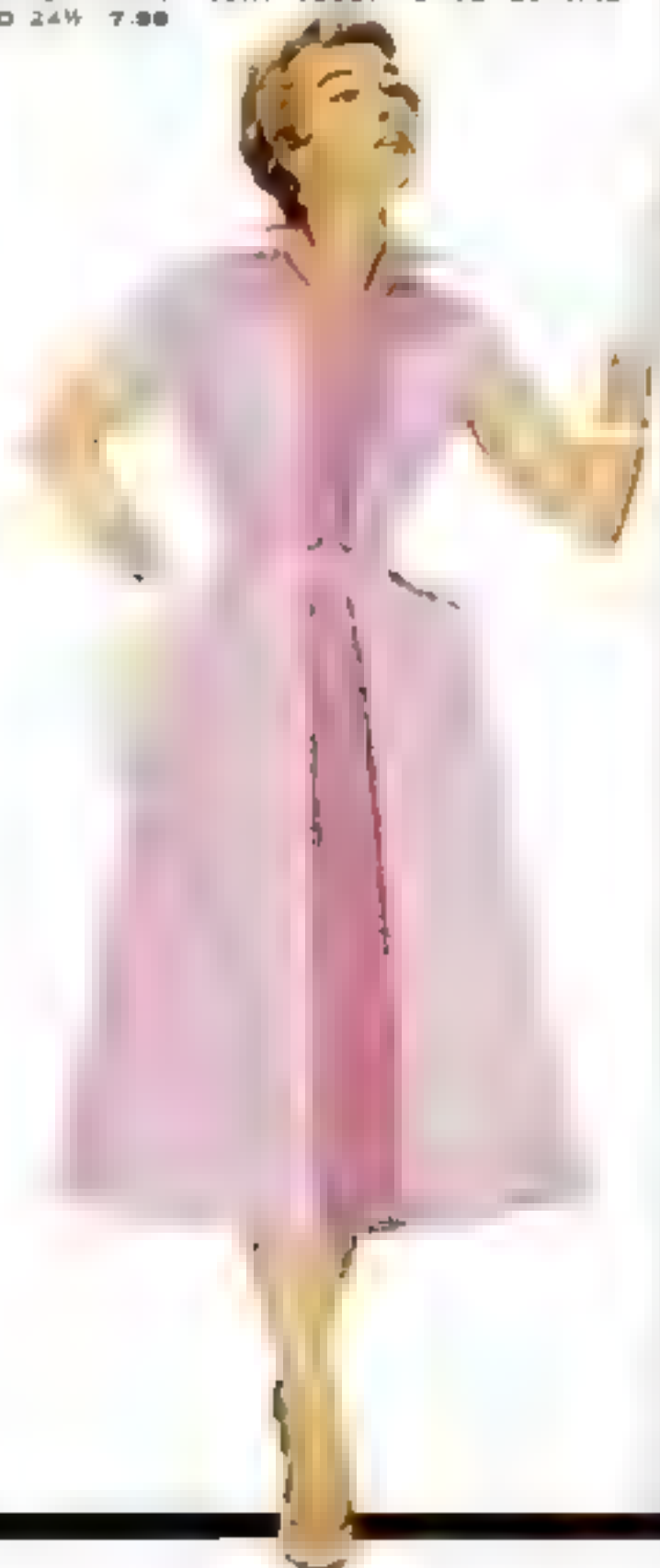
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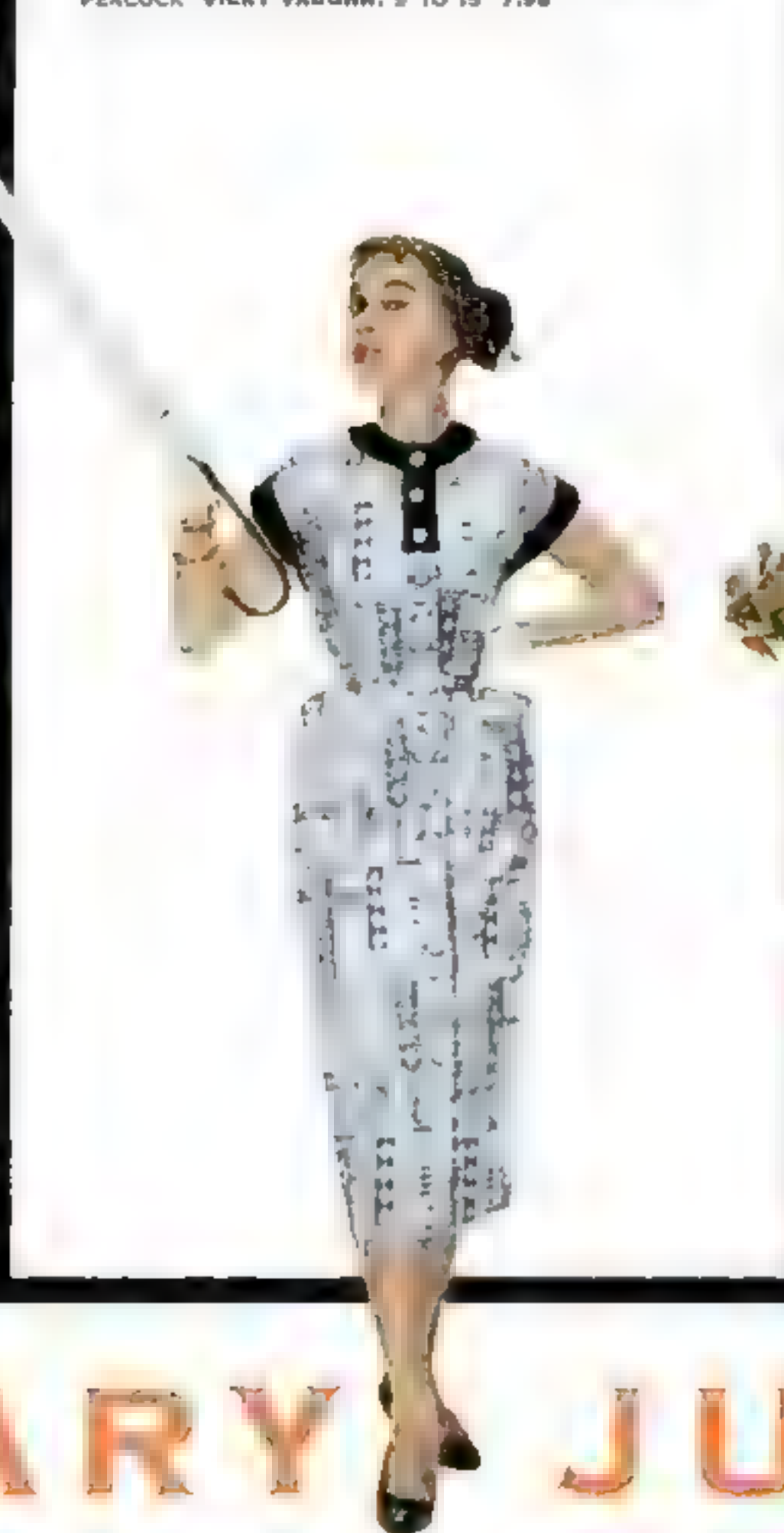
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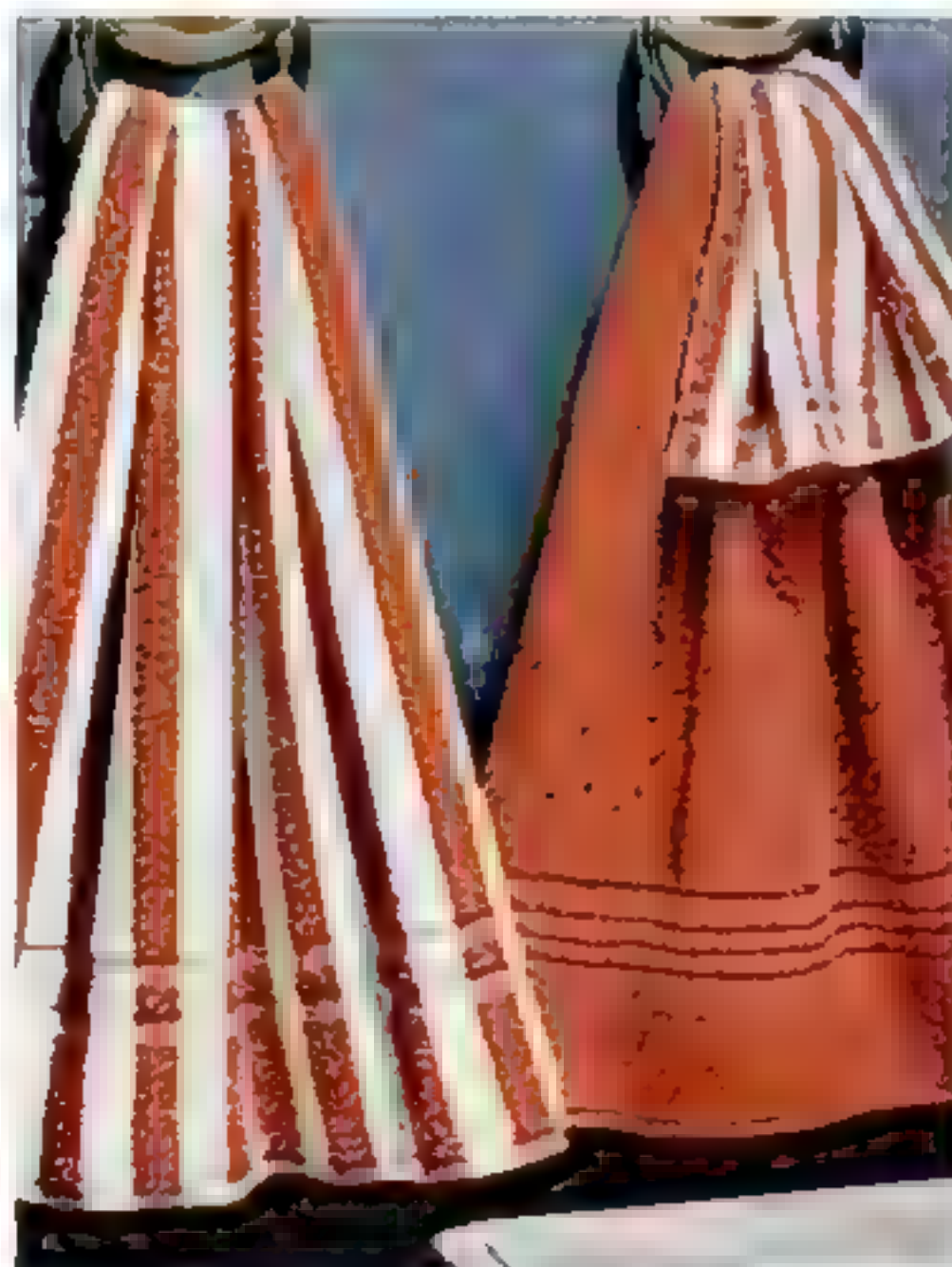
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NEVER BEFORE, SO MUCH FOR SO FEW

THE LUCKIEST GENERATION

Depression's babies today have pick of high-paying jobs

The morning traffic and parking problem became so critical at the Carlsbad, N. Mex. high school that school authorities in 1953 were finally forced to a solution: they set aside a special parking area for students only (*above*). In Carlsbad, as everywhere else, teenagers are not only driving new cars to school but in many cases are buying them out of their own earnings. These are the children who at birth were called "Depression babies." They have

grown up to become, materially at least, America's luckiest generation.

Young people 16 to 20 are the beneficiaries of the very economic collapse that brought chaos almost a generation ago. The Depression rammed the nation's birth rate to an all-time low in 1933, and today's teen-age group is proportionately a smaller part of the total population than in more than 70 years. Since there are fewer of them, each—in the most

prosperous time in U.S. history—gets a bigger piece of the nation's economic pie than any previous generation ever got. This means they can almost have their pick of the jobs that are around. They play in dance orchestras (*below*) and work at other jobs or go into business for themselves (*pp. 28, 29*). To them working has a double attraction: the pay is good and, since their parents are earning more too, they are often able to keep the money for themselves.

CARS OF CARLSBAD HIGH STUDENTS FILL OWN PARKING LOT

IN AURA OF FUN AND WELL-BEING STUDENTS DANCE IN GYM OF CARLSBAD'S HIGH SCHOOL AT WEEKLY "SOCK HOP" TO MUSIC OF A 12-PIECE STUDENT BAND





BREEDER of chinchillas, Jere Reid Jr., 17, holds \$3,000 animal, has paid off note father cosigned.



BOOKKEEPER, Rada Alexander, 19, gets \$200 a month in auto firm job she got after graduation.



ELECTRICIAN, Jack Harris, 16, still in school, picks up \$10 to \$50 a week in part-time repair jobs.



PROSPEROUS PAY-OFF of after-school jobs brings Mike Sweeney and Harold Ruley (right) with

Pat Marsh (left), Nita Wheeler, all 17, to Carlsbad's Red Barn restaurant, a favorite party spot.

GOOD FORTUNE STIRS

The teenagers on this page all live in Carlsbad, but the account of youth's opulent opportunities is not restricted to any one community. A young fellow like Sonny Thayer (right) can earn \$100 a week in the potash mines near Carlsbad and buy himself a pickup truck, hunting mule and all the equipment he wants to indulge his hobby as an outdoorsman. A Milwaukee high school senior like David Lenske (bottom, opposite page) can pick up enough money in odd jobs to buy stocks, all his own clothes and a 1946 Plymouth as well. In city after city merchants freely extend credit to teenagers.

One father, fearing that easy times may not be enough of a character builder, remarked, "They're lucky. But do they know it?" Mostly they seem to know it, even though they live with a worry they can never fully escape—the two years or more of military service for the



PAY IN TRADE is taken by Margaret High, 17, who works in music store, spends salary on records.

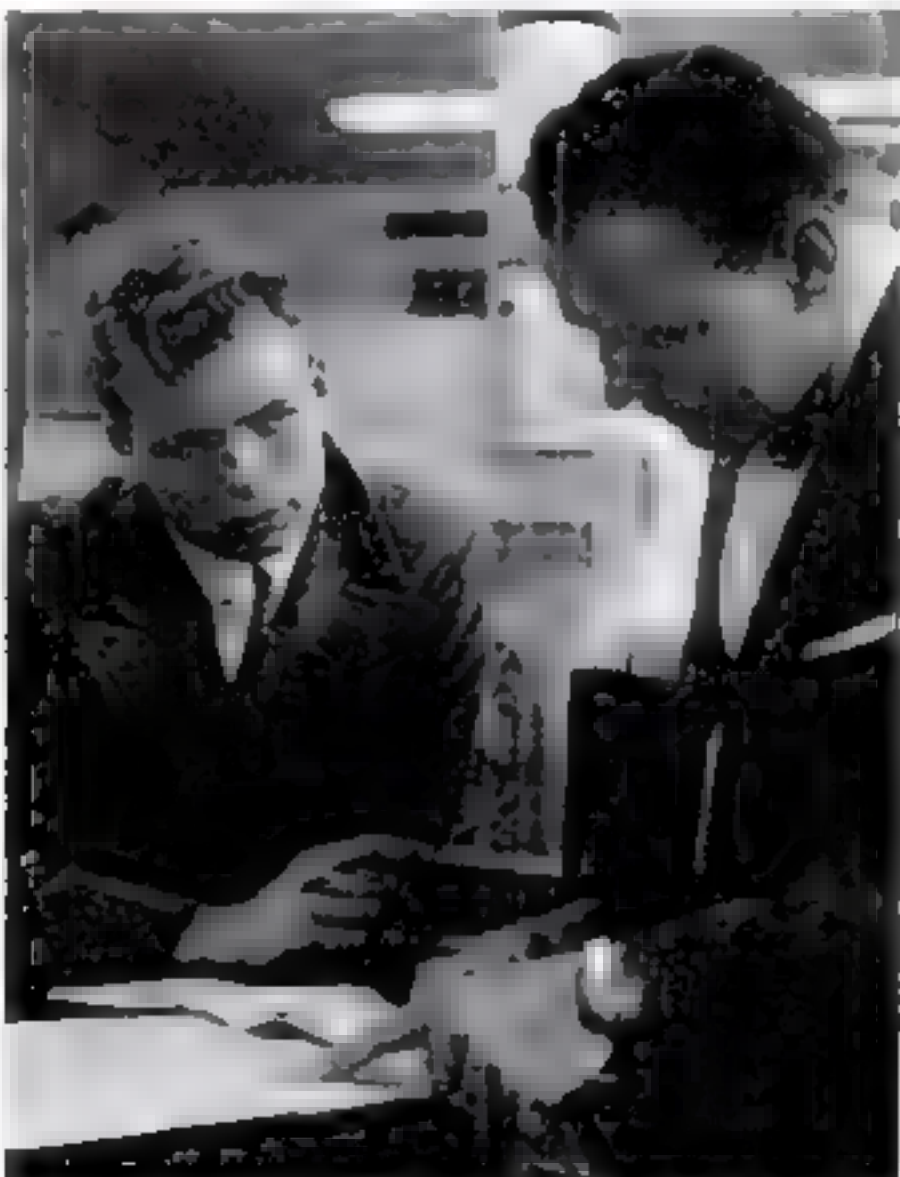


UTILITY WORKER, John Krueger, 19, who finished high school in 1932, earns \$2.24 an hour.

GREAT EXPECTATIONS

boys and the constant talk of war that hovers over them all. A judge who handles delinquency matters voices concern over the fortunate teenagers: "I don't know if having all those cars is such a wonderful thing. Some kids make more money than their probation officers with master's degrees." But a billing station operator who hires high school boys declares simply, "They are hard working and well behaved."

Thoughtfully a Milwaukee girl remarks, "We have more independence and education than other generations have had. We are going to be able to take care of ourselves and of our world." This confidence and reasoning reflects a generation which, having been brought up in and having worked in good and constantly improving times, will in the future expect—and work for—equally good times, or better.



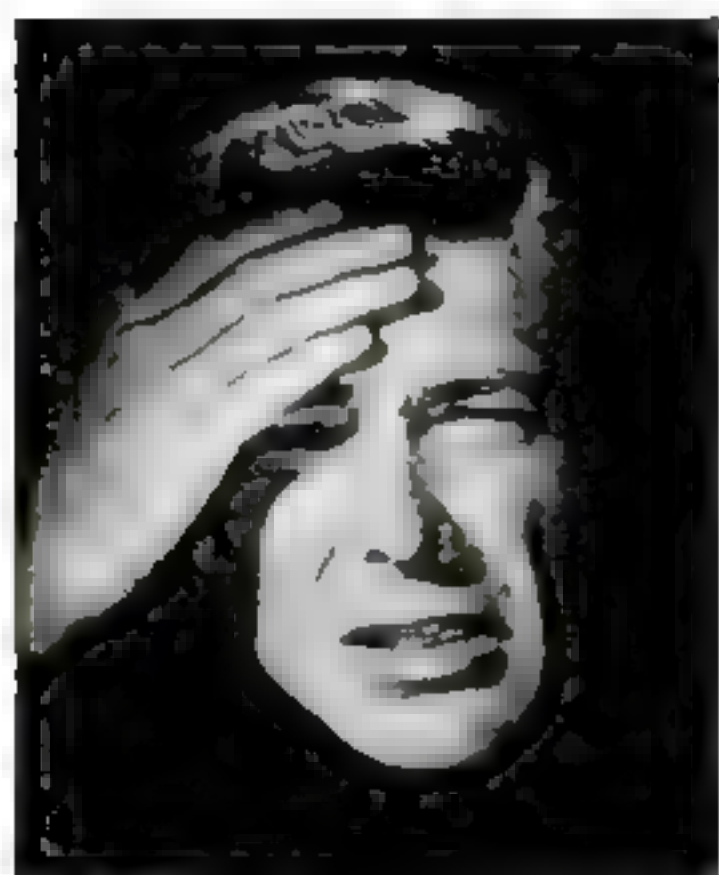
YOUNG INVESTOR, David Lenske, 17, having bought four A.T. & T. shares, talks with banker.



SONNY THAYER, 19, PACKS UP FOR HUNTING TRIP →

An important message to everyone who takes aspirin

for the relief of headaches, muscular aches and pains, toothaches, and
the discomfort caused by the common cold...



BUFFERIN[®] acts twice as fast as aspirin!

Won't upset your stomach

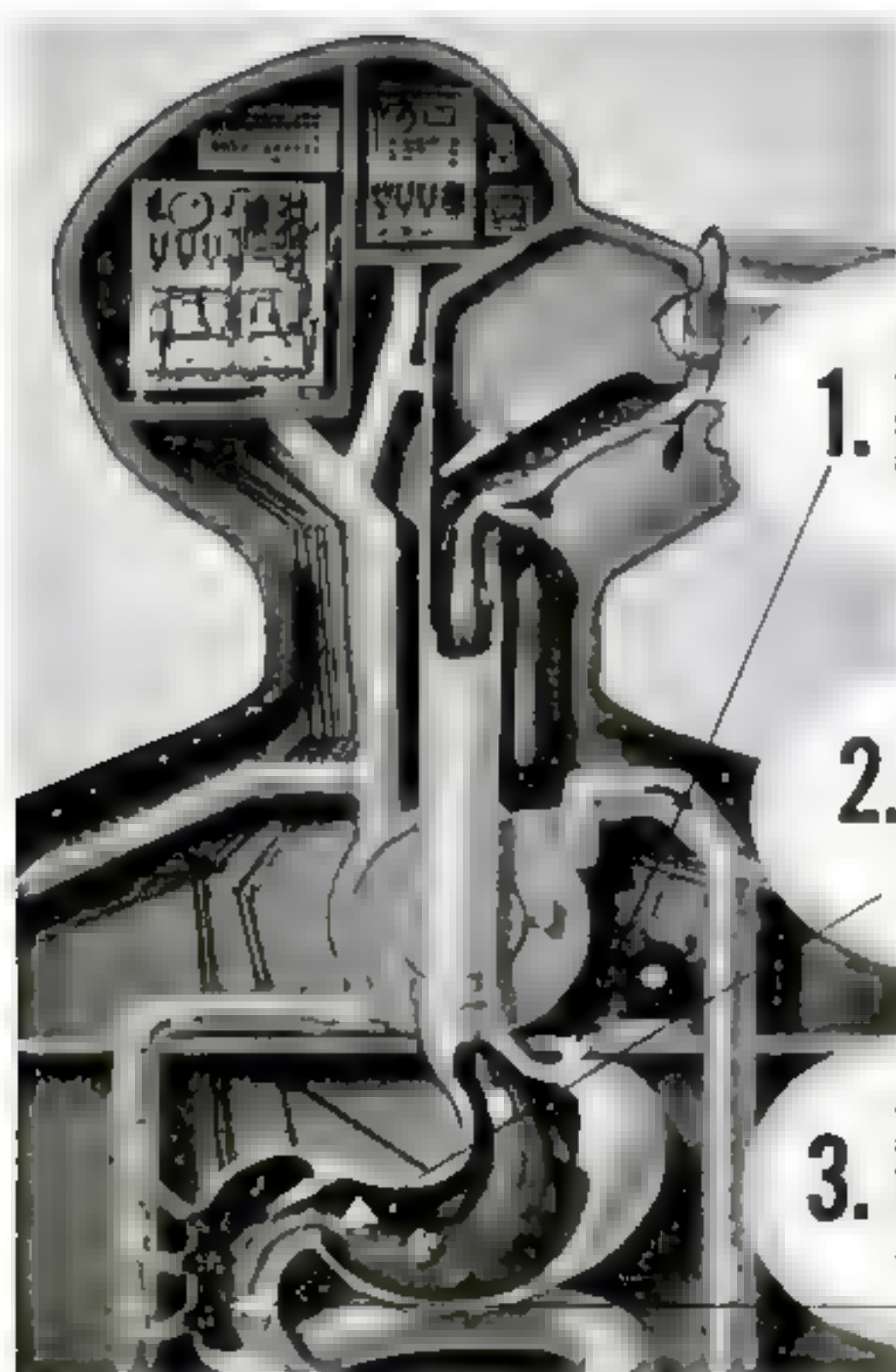
Check these facts with your physician:

BUFFERIN is aspirin PLUS two effective antacid ingredients. These ingredients accomplish two very important things:

1. They cause the aspirin in Bufferin to get into the blood stream, to relieve your pain, *twice as fast* as aspirin.
2. These same ingredients *protect* your stomach from any aspirin irritation, so you do not suffer the upset stomach which aspirin may cause.

NOTE: BUFFERIN was first made available to the public and to the medical and dental professions in October, 1948. Since then, EACH YEAR, MORE AND MORE PEOPLE, by the hundreds of thousands, have switched from aspirin to BUFFERIN for faster relief of pain without stomach upset.

P.S. If you suffer pain of arthritis or rheumatism, ask your physician about BUFFERIN.



Have you tried BUFFERIN?

Get some today... and keep it
handy in your medicine chest.





ARMOUR'S PHARMACEUTICAL CENTER IN KANKAKEE, ILL., DESIGNED BY HOLABIRD, ROOT AND BURGE, MAKES GAMMA GLOBULIN, VITAMIN B-12. AT RIGHT IS WATER TOWER

A MASSIVE, HANDSOME ADDITION TO THE LANDSCAPE

BIGGEST BUILDING YEAR

U.S. SPENDS RECORD \$34.7 BILLION ON NEW CONSTRUCTION

All across the U.S. people were coming upon familiar country fields and finding housing projects there, upon suburban street corners and finding brand new factories. In 1953 construction kept increasing until by year's end, it had set an all-time record of \$34.7 billion. Residential building did well enough before a decline in the late months to put the whole year above its 1952 figure, although it was still behind the peak of the 1950 housing boom. Road and public utility building was well up. But the biggest push to 1953's historic high came from industrial and commercial buildings and buildings for public use.

Here the result, as measured in dollars, produced an increase of almost \$1 billion. The result in architectural beauty can be measured by the handsome buildings pictured on these pages, all of which were completed in 1953.

It was the hand-omeness of these buildings that was most surprising, since factories had once been the stepchild of building, located in congested areas and anything but pretty. But more important than looks was the money and permanence put into them, for the stunning structures shown here are above all else impressive testimony to the faith industrial America has in its own future.

CONTINUED ON NEXT PAGE



TRIANGLE TRANSFORMED

Emerging from mist, two of Pittsburgh's three new "Gateway Center" office buildings stand near the apex of the city's "Golden Triangle" area. The structures, which cost a total of \$32

million, are the latest units in Pittsburgh's tremendous rebuilding project which has transformed a large section of the antiquated center of town into a spanking series of skyscrapers.



A PRETTY PLANT IN A PARK

Parker Pen's new \$4.5 million plant in Janesville, Wis. is a handsome example of a widespread industrial phenomenon—the factory set in a park. The Janesville plant is not only pleasing to look at but is also a pleasant place to work in: it is entirely air- and sound-conditioned.

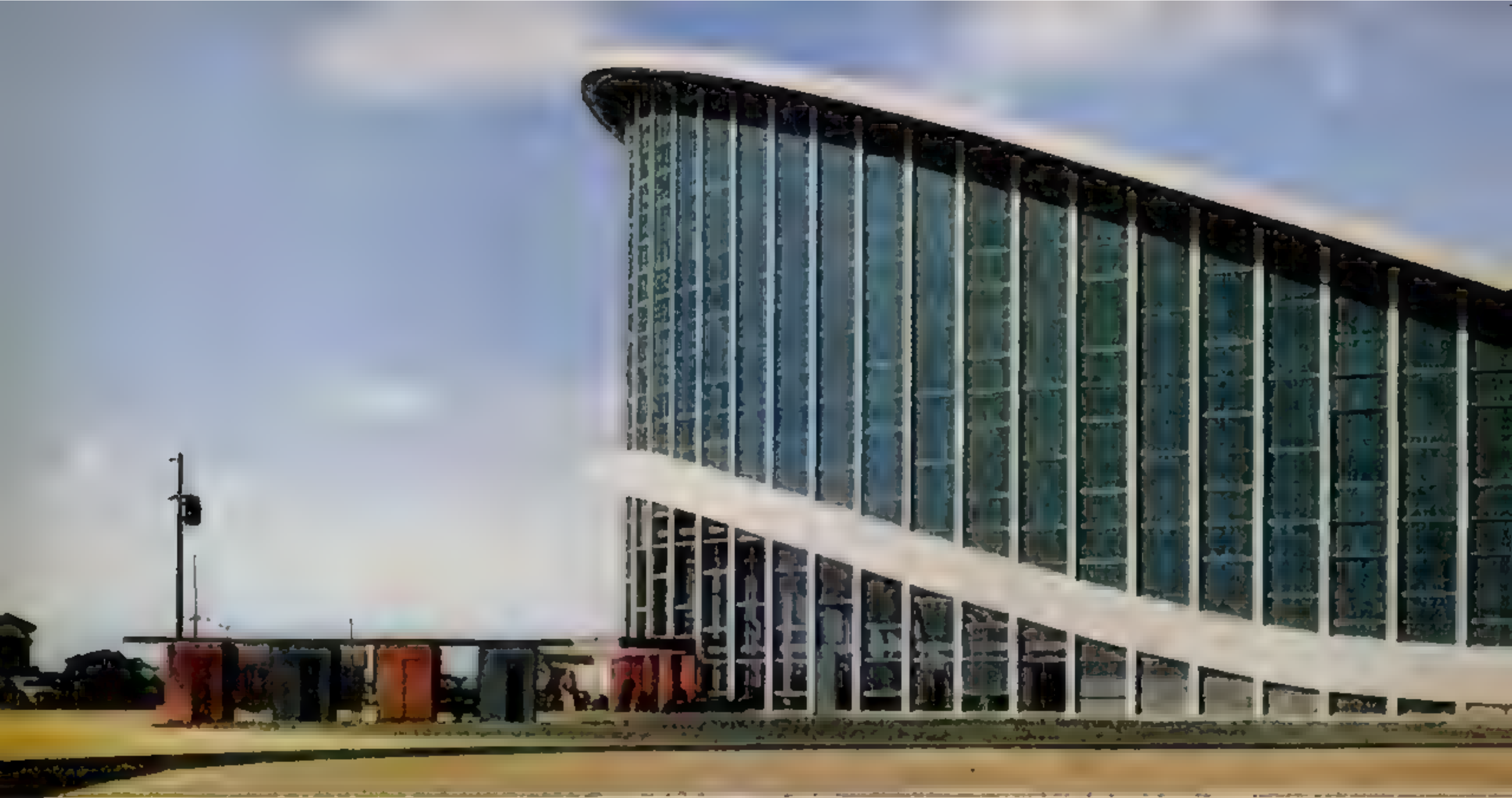
FOUR-WAY FLOW ON THE FREEWAY

Probably the most complex traffic interchange ever built, Los Angeles' \$3.5 million crossover links up four heavily traveled arteries near the city's center. Though \$3.1 billion was spent on road building during 1953, the demand for new roads was still far ahead of construction.



CANTILEVERS IN CLEAN CONCRETE

For a research center in Boettcher, Colo. the Ideal Cement Company decided to advertise itself by using concrete throughout. Designed by Fisher & Fisher, the building has a glassed-in center stairway that seems floating in space but is cantilevered from a central support.



ARENA IN PARABOLAS

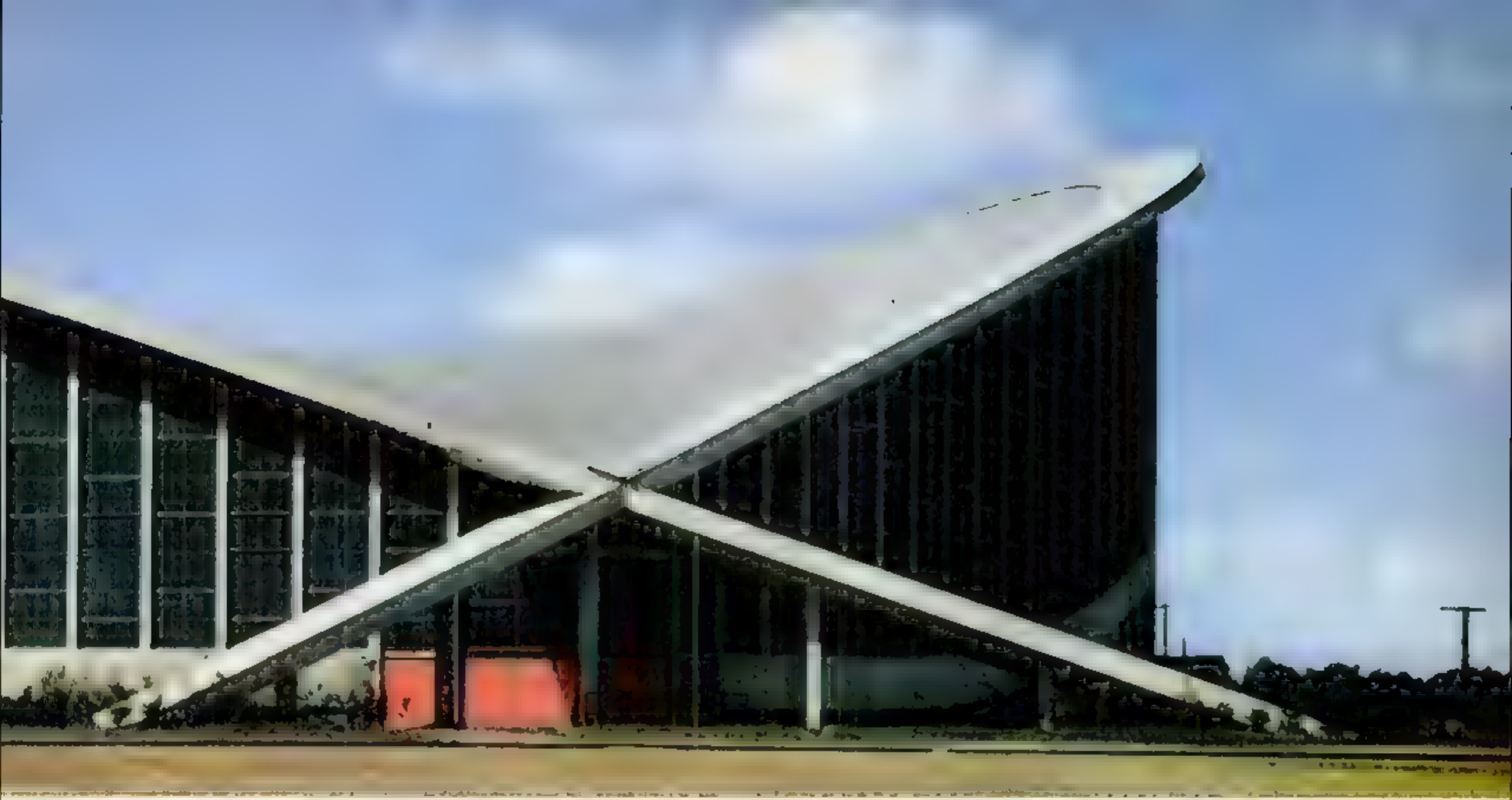
One of the most remarkable buildings ever constructed was dedicated last fall at the State Fair grounds in Raleigh, N.C. Conceived by the late Matthew Nowicki, a Polish architect



NARROW BISCUIT BOX

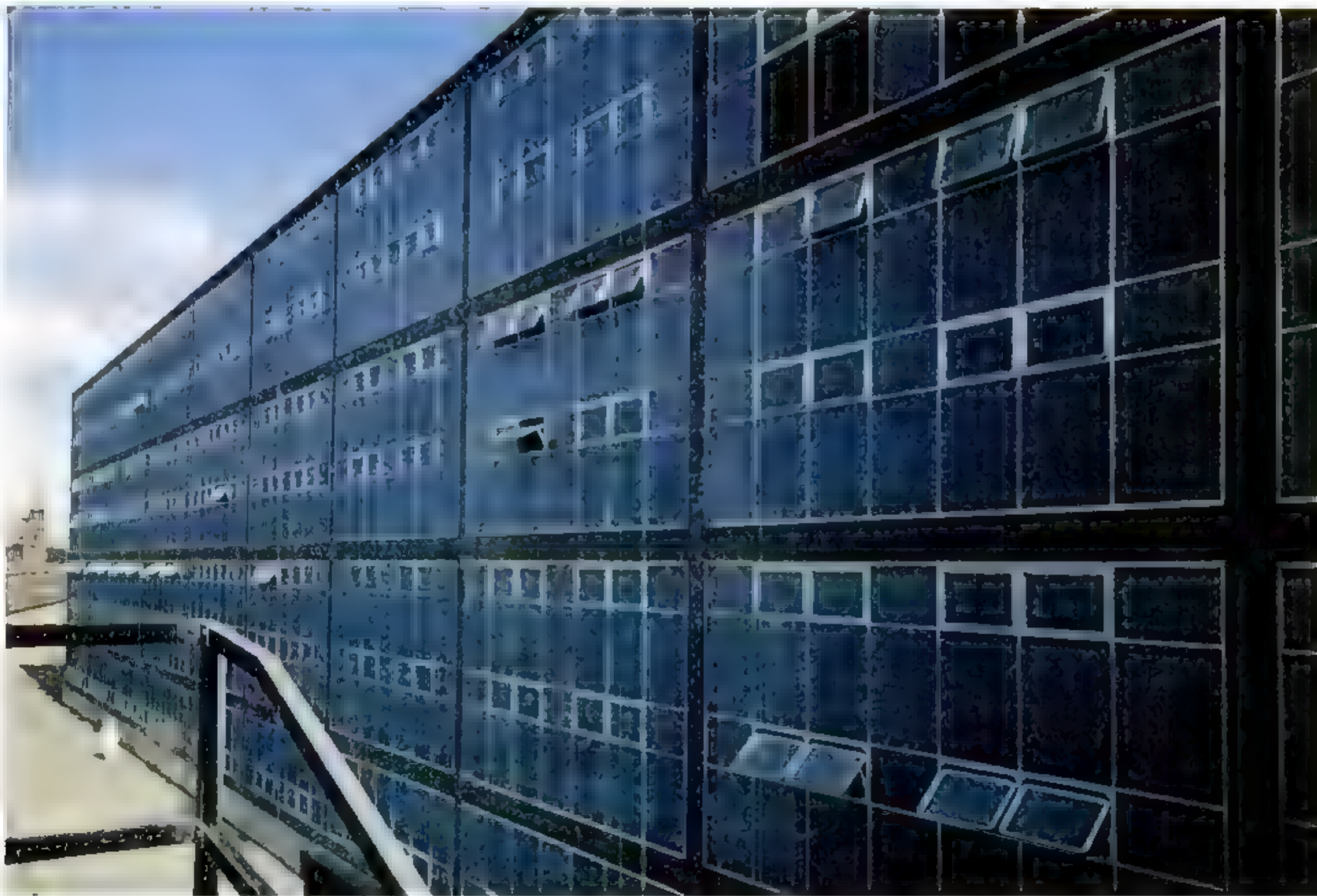
Built long and narrow to allow for continuous baking ovens, the United Biscuit Company's sleek new plant in Melrose Park, Ill. is made almost entirely of steel. The entrance section,

shown here, has curtained windows, but most of the building is an efficient, windowless steel box honeycombed with big pipes which carry flour, flavorings, chocolate and liquid sugar



who was killed in a 1950 plane crash, it is a livestock-judging arena whose saddle-shaped roof is hung on cables which are suspended from two huge parabolic arches. The arches

rise to a height of 90 feet and give an unobstructed view of the arena to all 5,400 spectators. Raleigh Architect William Henley Dietrick collaborated with Nowicki on the project.



GLASS VINEGAR PLANT

The H. J. Heinz Company's new vinegar factory in Pittsburgh, designed (like the biscuit plant opposite) by Skidmore, Owings and Merrill, is mostly glass because corrosive vinegar

fumes do not affect glass. The glass is blue because it has been treated to absorb heat. One reason framing is exposed is because it must be watched continually for signs of corrosion.

CONTINUED ON NEXT PAGE



POOLS FOR MANY

Almost unnoticed during the prodigious boom in mass housing has been the boom in luxury homes. The above group of fancy new \$50,000-\$100,000 homes in Encino, Calif. has 29 swimming pools.

LAWNS FOR ALL

A little-regretted casualty of recent residential building has been the attached house. As in Battle Hill Village in Union, N.J., builders today must detach the houses, provide back yards, lawns, play space.





RAMBLERS ON THE ROOF

The Nash-Kelvinator Corp.'s new shipping building at its Kenosha, Wis. plant was originally designed for three stories. When plans were changed to allow for only two stories,

the roof was reinforced anyway so that the third level could be added later if needed. This gave Nash a handy parking lot for its Ramblers and other models waiting to be shipped out.

CONTINUED ON NEXT PAGE



OUTLOOK FOR OILMEN

As the latest in a series of nine new buildings near its oldest and largest refinery in Whiting, Ind., the Standard Oil Company (Indiana) finished its engineering and headquarters unit

(left). From the big windows and the glass-walled recreation room atop the building the engineers can happily contemplate the refinery by day, night or even (as at over) by dawn.




STRANGE PIPES IN TOLEDO

A major change in the U.S. industrial skyline in the past 20 years has been made by oil and chemical plants which are dominated by strangely shaped towers and pipes. A new catalytic cracker (*far left*) at Pure Oil's Toledo refinery turns out 300,000 gallons of gas a day.

BIG HAZEL'S EVENING GLOW

In a vast postwar expansion program to bring about a 26% increase in capacity, U.S. Steel's biggest new plant is the Fairless Works in Morrisville, Pa. At night the sky glows from blast furnaces like "Hazel" (*left*) named after Mrs. Fairless, wife of company's chairman.

CONTINUED ON NEXT PAGE



STEEL BARS AT 40 MPH

While increasing capacity by adding to plants, steel companies have also upped production through new methods. At Jones & Laughlin's new bar mill in Pittsburgh a bar starts out in

foreground, goes through roughing stands, doubles back around a corner (right) through finishing stands, ends up at cooling bed (background) in 18 seconds, going a most 40 mph.



A Light Forever Burning

A Voice That Is Never Stilled

Night comes on and spreads a blanket of darkness upon sleeping cities and towns. Here and there a lone policeman. In the distance a clock tolling the hour.

In the dark silence of the night there is one light forever burning . . . a voice that is never stilled. That light is the light in the telephone exchange. That voice is the voice of your telephone. Its very presence gives a feeling of security and of nearness to everyone.

Whatever the need or the hour, the telephone is always ready to serve you—quickly, dependably, and at small cost.

BELL TELEPHONE SYSTEM

LOCAL to serve the community. NATIONWIDE to serve the nation.





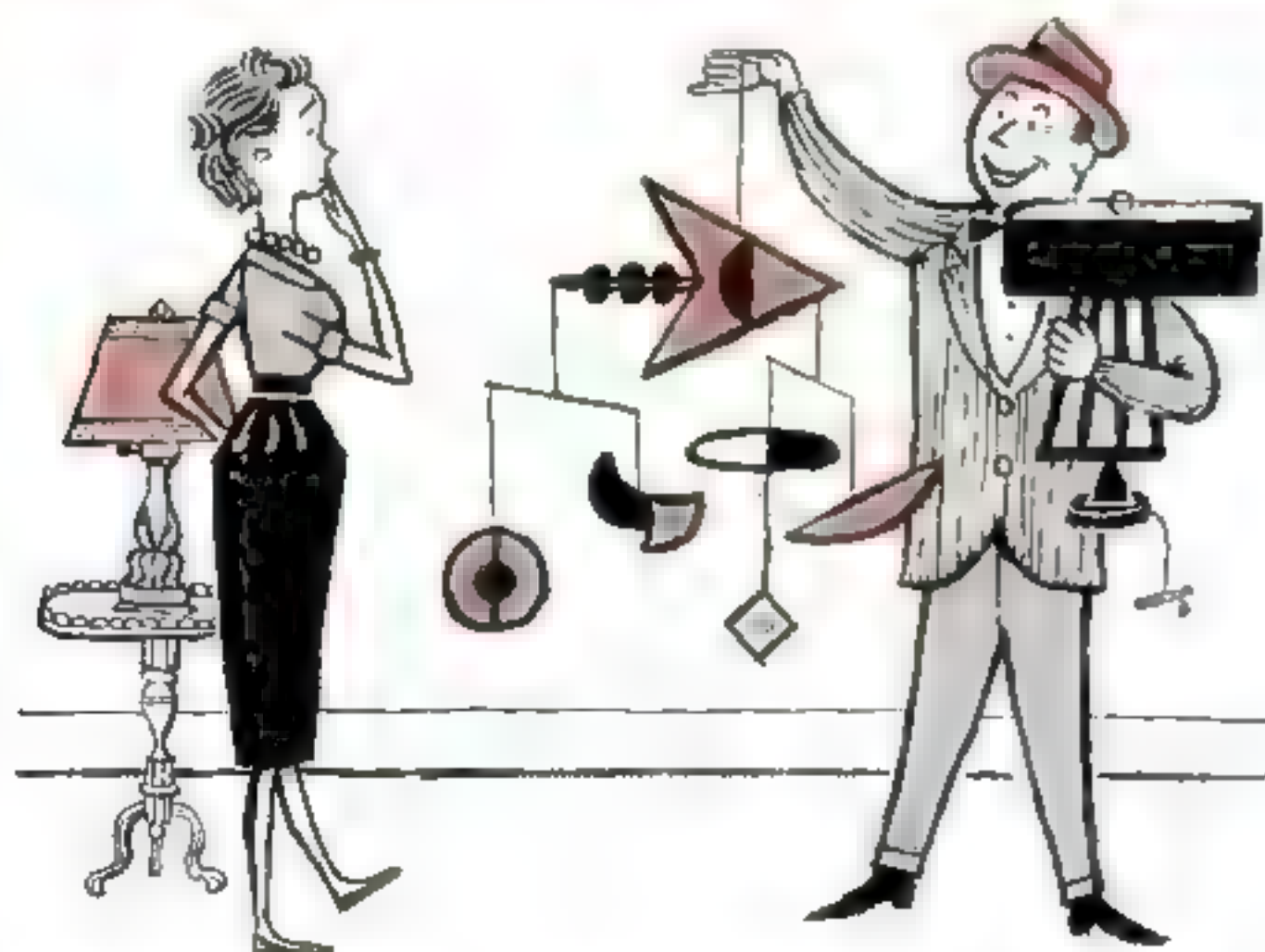
IMPROVING HIS PROPERTY keeps the U.S. male busy nights and weekends. One of the most popular improvements is a barbecue which the whole family helps build. Inevitably the mortar will have to be mixed several times.



HE CONSIDERS A MODERN, SELF-TENDING FURNACE NECESSARY EQUIPMENT



ENTERTAINING business associates costs less at home than in bistros, has turned the new U.S. man into an excellent host and bartender. His bar is well equipped with spirits, glasses, openers, strainers, but he always runs out of ice.



GOING MODERN involves educating his wife to a new point of view. He is accustomed to modern buildings in the city and to modern offices so that he is more receptive to mobiles and functional furnishings than she is likely to be.

A BOON TO THE HOUSEHOLD

The new American

The average U.S. man used to wait until after his 24th birthday to get married. Now he goes to the altar when he is 22. As a newlywed he used to rent an apartment. Now he buys a house. He used to wait for several years before having his first child. Now after three years of marriage he is the father of two. Whereas he used to leave the decorating of the house strictly in the hands of his wife, a countrywide survey of members of the American Institute of Decorators shows that today he is the chief household gadget buyer, helps choose most furnishings for the home and is more modern in his tastes than his wife.

This domestication of the American male has had a marked effect on the nation's economy. Since he wants mechanized aid with any chore he



BABY TENDING does not terrify husbands today. Some even go to baby care classes, learn to wrap a neat diaper and to bubble Junior deftly. With father available as sitter, wives can have their hair done, shop, go to club meetings.



WITH HIS CELLAR CLEANED UP HE CONSIDERS A PLAYROOM INDISPENSABLE

AND A BOOM FOR INDUSTRY

domesticated male

undertakes, he has accounted for a tremendous increase in sales of portable power tools (from \$6 million worth in 1947 to \$150 million in 1953) and in power lawn mowers (from 10,000 in 1945 to 1.4 million in 1953). Since he is unable—or unwilling—to pay the high cost of labor, he has become an amateur painter, paperhanger and builder. Paint companies, wallpaper companies, plywood manufacturers, lumberyards are busy wooing the new home market and currently 55% of the paint, 60% of the wallpaper and 10% of the plywood are bought for home use.

Since domestic help is expensive, he has become baby tender, dishwasher, cook, repairman. Probably not since pioneer days, when men built their own log cabins, have they been so personally involved in their homes.



LAWN MOWING, now that it can be accomplished behind a noisy engine, gives a man a sense of power and a gadget to tinker with. He spends almost as much time fussing over his mower as he does mowing his suburban plot.



MARKETING has become a family affair. Supermarkets, which stay open at night, appeal to the male's urge to discover and experiment. He tends to spend more money for specialties, be more indulgent about household food budgets.



GADGET BUYING is man's meat. He cannot resist a new can opener, iron, mixer, or screwdriver. Few women would buy a champagne opener, but they are sold to men—even if they drink only beer.



BUILDING a boat for Junior or a new wing for the house, the domesticated man will spend an estimated \$3 billion this year on tools, lumber, other carpentry paraphernalia. In addition he will get to know his audience—his children.

MAKE YOUR BUDGET WORK OUT **EVEN**

WEAR WORK CLOTHES MADE BY **STEPHENS**

A Little BIGGER
A Little BETTER

Stephens

WORK SHIRTS • PANTS • DUNGAREES

STEPHENS SHIRTS

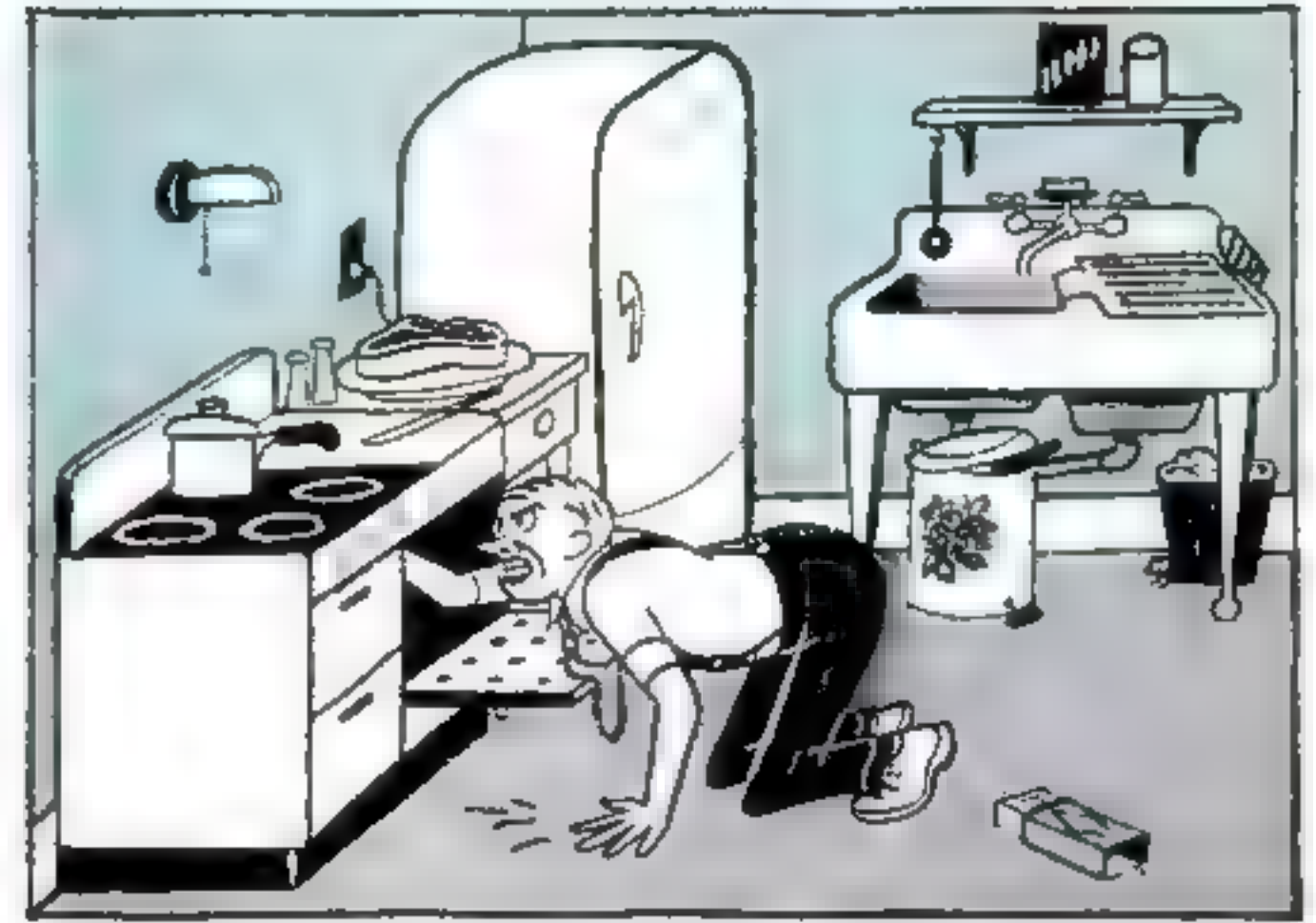
- Extra full cut
- 7 button front
- Dress style lined collar
- 2 button sleeve
- Sanforized and fast color

STEPHENS PANTS

- Extra full cut
- Deep bootsail cloth pockets
- 8 belt loops
- Reinforced at all points of strain
- Sanforized and fast color

STEPHENS, makers of fine work clothes for over a quarter of a century, are sold from coast to coast. Ask at your favorite store for the work clothes that give you more. Dealer inquiries invited. Write to **W E STEPHENS MFG. CO., INC.** NASHVILLE, TENNESSEE

ADVERTISED ON **GRAND OLE OPRY** EVERY SAT. NITE



COOKING in an outmoded kitchen is possible for a woman, but it tries the efficiency expert that every man imagines he is. He wants convenience, and the



LOUNGING, a big part of man's life now that he spends more of it at home, is far from blissful with a dismal light, a foolish table, a rump-prung chair.

CAN'T SLEEP?

WHEN ACID INDIGESTION OR
HEARTBURN KEEPS YOU AWAKE
GET FAST RELIEF WITH

TUMS

FOR THE TUMMY

GUARANTEED TO
CONTAIN NO SODA

Delight
your dog.

with **Krispy**,
Krunchy

Klix
DOG CANDY

New, veterinarian-approved treat
for cats and kittens, too!

COUGHERS!

DOCTORS
AGREE
MENTHOL
BRINGS
RELIEF



Luden's Menthol Medication goes where your cold goes—to help clear your nose, to help soothe your throat. You get FAST relief.



When FIRE strikes..

Reach for
SCIENCE'S "MIDGET
MIRACLE"

PRESTO

FIRE EXTINGUISHER

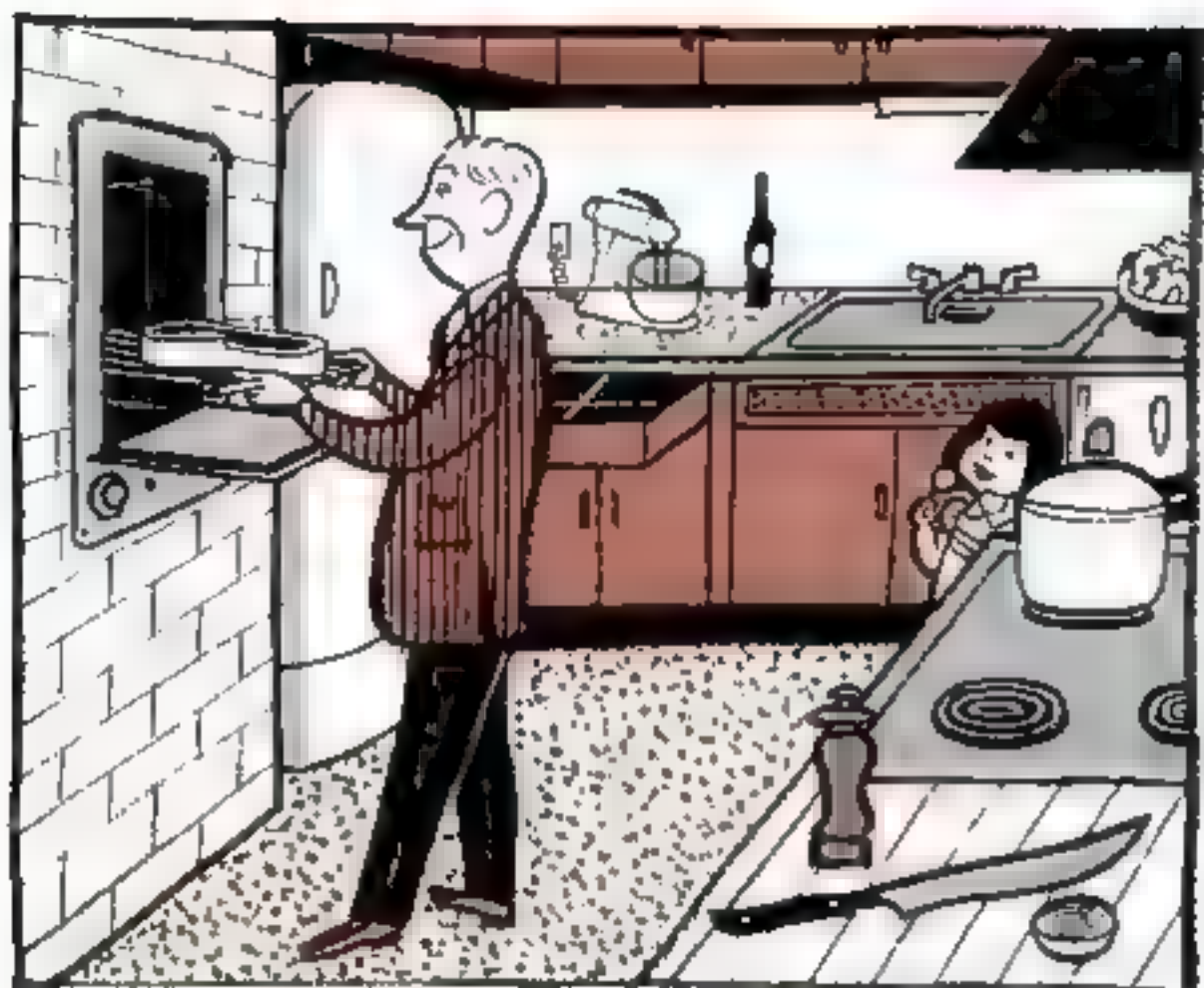
Almost Two Million Already Sold!
ONLY \$5.98 • DOUBLE CAPACITY \$9.95

Tops on
CHOPS

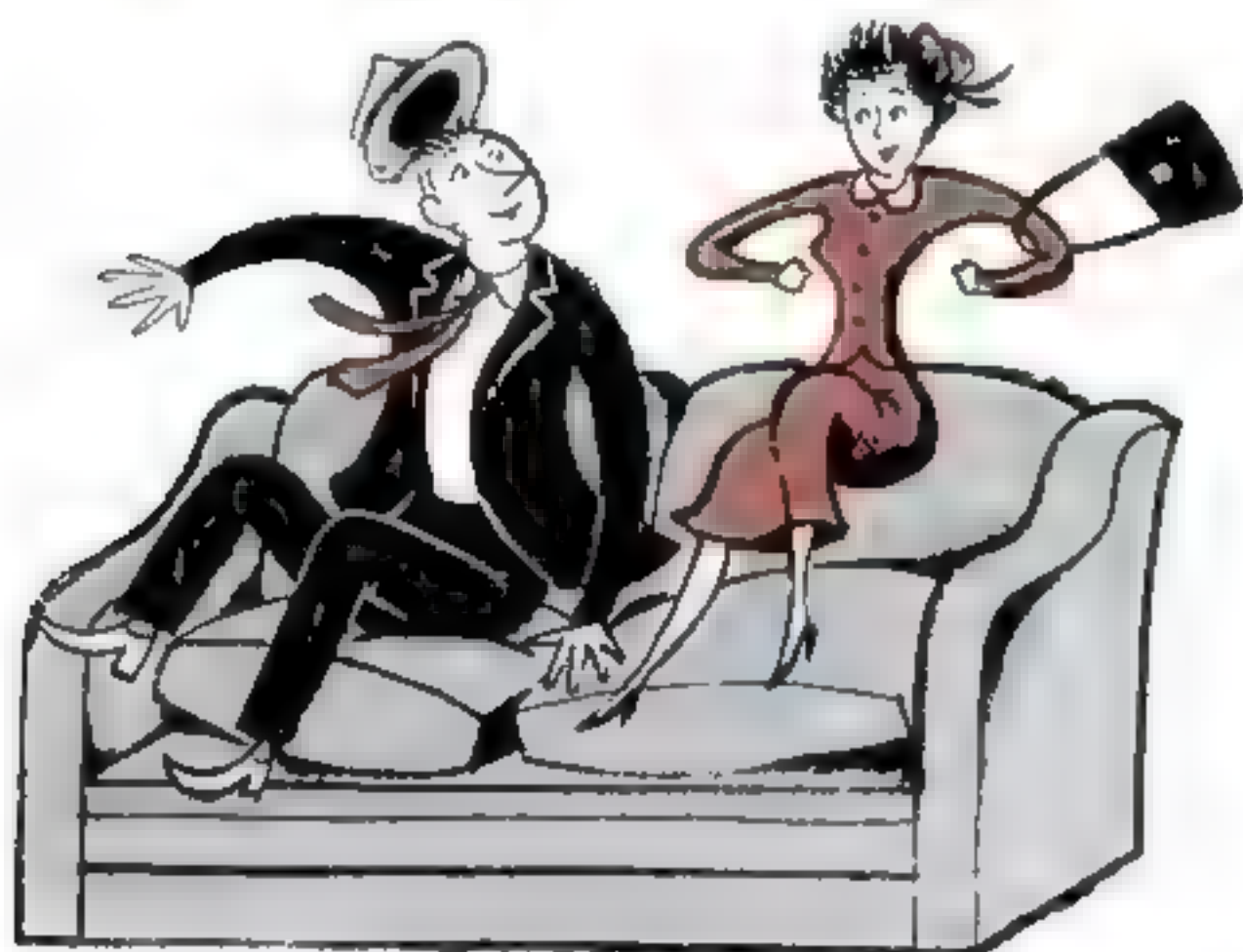
Ask for A.1 when
dining out, too!

A.1
SAUCE





latest laborsaving devices. Home economists guess that more kitchens are remodeled the day after a husband gets supper than after years of wife's complaints.



TESTING when buying furniture might not occur to a wife, but a husband insists on quality, so he is a tester, label reader and comparative shopper.



EDUCATING family is no longer sloughed off on wife. Fathers are active in P.T.A. and sometimes even outnumber mothers at school on Parents' Day.

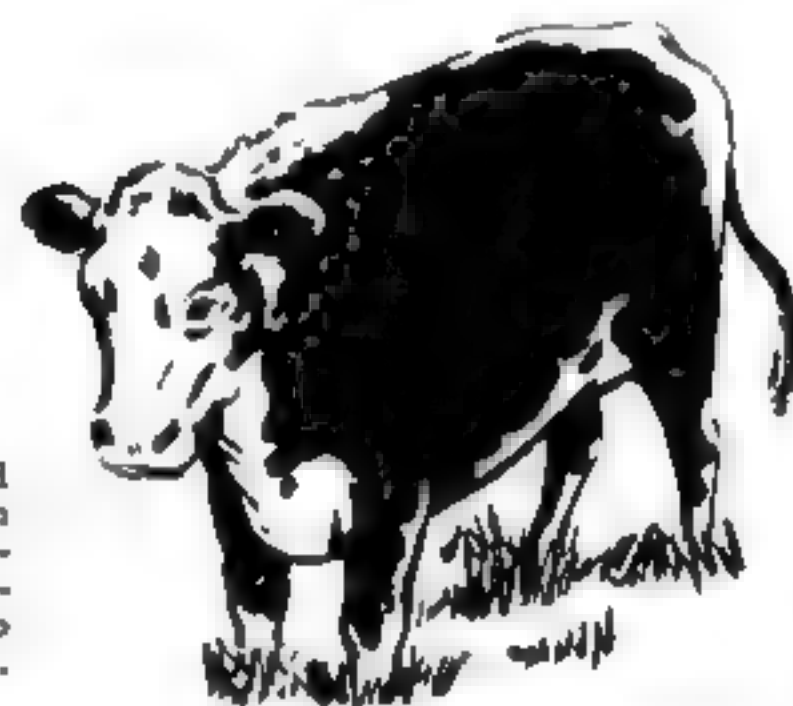


How come \$1.00 steak from 25¢ steers?

1000 lbs. Steer
at 25.8¢ per lb.

Packer pays
\$258⁰⁰

Production costs of cattle raisers and feeders include breeding stock, death losses, feed and labor, land use, taxes, interest, supplies, equipment and other expenses for the three full years it takes to produce and feed a choice grade steer.



590 lbs. Beef
at 41¢ per lb.

Retailer pays \$241⁹⁰

Value of by-products, such as hides, fats, hair, animal feeds, etc., helps offset packers' dressing, handling and selling expenses, so that usually the beef from a steer actually is sold to the retailer for less than the live animal costs. As shown above, packer pays \$258.00 for typical 1000-lb. steer—sells meat for \$241.90*.

	Lbs.	Retail Price	Total
Porterhouse, T-bone & Club Steak	31	\$1.00	\$35.00
Sirloin Steak	55	.80	44.00
Round Steak	50	.77	38.50
Rib Roast	30	.65	19.50
Boneless Rump Roast	25	.80	22.25
Chuck Roast	105	.55	57.75
Hamburger	100	.42	42.00
Stew Meat & Misc. cuts	60	.50	30.00

450 lbs. of Retail Cuts
Consumer pays \$291⁴⁰

Retail markup takes into account such costs—and they've been rising—as rent, labor, depreciation on equipment and fixtures, etc. Also there is a loss of weight averaging 140 lbs. from shrinkage, fat and bones not salable to consumers. Prices are typical**.

All cuts of beef are equally nourishing.

If there were equal amounts of all, with an equal demand for all, steak and hamburger and stew meat would all sell at the same price.

But that just isn't the case—see table at right, above.

In general, demand is concentrated on steaks and roasts. This is why porterhouse steak, for example, may sell in some stores for \$1.00 while hamburger sells for 42¢.

If consumers don't want steak

badly enough to pay \$1.00 for it, the price goes down. If they demand more hamburger and the supply does not increase in line with increased demand, the price goes up.

That's how the law of supply and demand works.

*Based on actual government figures: Chicago market reports of U. S. Dept. of Agriculture for choice-grade steers and choice-grade beef, mid-October, 1953.

**Retail prices shown above are averages for all kinds of Chicago stores, including cash-and-carry, charge-and-deliver, in high rent areas and in low rent areas. Prices in some stores may be higher . . . in others lower.

AMERICAN MEAT INSTITUTE Headquarters, Chicago • Members throughout the U. S.

ONE PROBLEM THAT MUST BE SOLVED IF

A NEW, DARING PLAN TO UNSHACKLE



HOW EUROPE CAN BE SAVED AND INTERNATIONAL COMMERCE REVIVED

by JOHN KNOX JESSUP

THE American economy described in these pages is, in the words of John Foster Dulles, "a Paradise compared to most of the world." It yields the American a standard of living roughly three times as high as the Englishman's, six times as high as the Italian's, 11 times as high as the Turk's, 18 times as high as the Peruvian's, 40 times as high as the Indonesian's. Most of the world's 2.5 billion people are crowded between the Peruvian and Indonesian points on this scale. Since even the American wants more income than he gets, it is obvious that the world as a whole is a pretty poverty-stricken place. Can Americans make it any richer?

Many Americans would like to try; and not just because the rich have a duty to the poor. Wealth is like muck, said Lord Bacon, good only if it be spread. Or, to quote an American businessman, "You can't do business in a poorhouse," and Americans cannot indefinitely go on raising their own standard of living without doing business—more and more of it—with the rest of the world.

When the British were the world's richest nation—i.e., until about 1914—the rate at which most of the world increased its wealth was a good deal more spectacular than it has been since. The muck, though thinner, was spread farther and faster in their day than in ours. Since the Americans have found a secret of domestic wealth that is obviously an improvement on the old British model, it is too bad, to say the least, that we have been less successful in imparting it. This comparative failure is perhaps the greatest single failure of Western statesmanship since the war.

A measure of this failure is the lag in world trade. After a sharp increase from 1945 to 1951 the total volume of world trade has stagnated and has yet to regain anything like its prewar relationship to world production. Moreover, this volume of world trade, unsatisfactory as it is, rests on two extremely rickety supports. One is U.S. handouts, which have totaled \$42 billion and have accounted for about one tenth of all the international trade done since the war. The

second is an elaborate system of government controls in virtually all trading countries, their chief purpose being to discriminate against U.S. exports because of the "dollar shortage." Such controls, besides limiting the amount and confining the channels of all trade, have incidentally enforced idleness on the chief known method of creating new wealth, namely the flow of capital in international investment.

With the U.S. having given away \$42 billion and having allowed itself to be the supine target of discrimination, it is hard for an American to feel very guilty about the failure of world trade. Blame aside, however, only one thing can remedy the failure: a vigorous American effort and a wise use of American power on behalf of a better system. It is this fact which gives importance to the forthcoming report of the Randall Commission, which is supposed to formulate that crying need, a new U.S. foreign economic policy.

The Randall Commission, the most crucial of Eisenhower's experiments in "government by postponement," was asked to study all aspects of U.S. foreign economic policy. This was one of the most spurious assignments since Penelope said she must weave Laertes' shroud: for all aspects of postwar U.S. foreign economic policy have been studied backward and forward by one commission after another, private and governmental. And they have all made more or less the same report, namely that U.S. trade policies should be liberalized: for the basic facts and figures, accessible to all, permit no other conclusion. On the other hand, there is much less agreement on whether or how such a revolution in American policy (protectionist since July 4, 1789) can be brought to birth. If the Randall Commission comes up with a program of liberalization that enlists the self-interest of Congress and the people, it will make history. The present article is an attempt to show that if the American interest in world trade is properly understood, the commission's problem is not insoluble.

The immediate world trade problem is as tangled as a snake pit, but three snakes are visibly larger than the others. The first of these is

THE U. S. PATTERN IS TO BE EXTENDED

TRADE AND ENRICH THE FREE WORLD



IF THE U.S. USES ITS MONEY AND ITS MARKET IN A GIGANTIC DEAL

and MICHAEL A. HEILPERIN

the persistent imbalance in international payments since the war, loosely called the "dollar shortage." This means simply that the rest of the world wants more American goods than it can pay for. It has been handled up to now by a double device: the U.S. government gives away enough American goods to meet part of this demand, while the rest of it is suppressed by other governments' antidollar restrictions on their peoples' trade and currency. As the handout share of this device diminishes (Congress has declared its intention of eliminating it), foreign governments must inevitably tighten their restrictions against dollar goods. Already their restrictive machinery is hitting on all cylinders. The results show not only in the recently improved gold and dollar positions of most European countries, but also in the simultaneous decline of U.S. commercial exports, which has become a matter of distress to some of our powerful export industries and especially to cotton and wheat farmers. The dollar trade problem is being "cured" by cutting dollar trade. This could involve the U.S. in a new kind of depression.

Can the "dollar shortage" be handled without further handouts and without further cuts in dollar trade? Harold Stassen, head of our Foreign Operations Administration, sees it as a problem of how to keep dollars circulating abroad at about the present level of \$22 billion a year. The most logical method, of course, would be to increase U.S. imports, letting foreigners earn the dollars they need. But over our imports (now about \$12 billion a year) Stassen has very little control. So he tries to push out the dollars by other expedients. One is "offshore purchases," whereby the U.S. pays dollars to European suppliers of arms for NATO. Another is U.S. private investment abroad, now about a paltry \$1 billion a year, which Stassen by various stimuli is hoping to double.

Indeed the torpid condition of all international investment, dollar and other, is the second big snake in the pit. Like trade, international investment is a far smaller proportion of production than it

used to be. U.S. foreign investment is about half of all the international investment there is. Even the World Bank, which has loaned a careful \$1.7 billion since 1947, looms large in this droughty picture; so even does our \$100 million-a-year Point Four program of technical assistance.

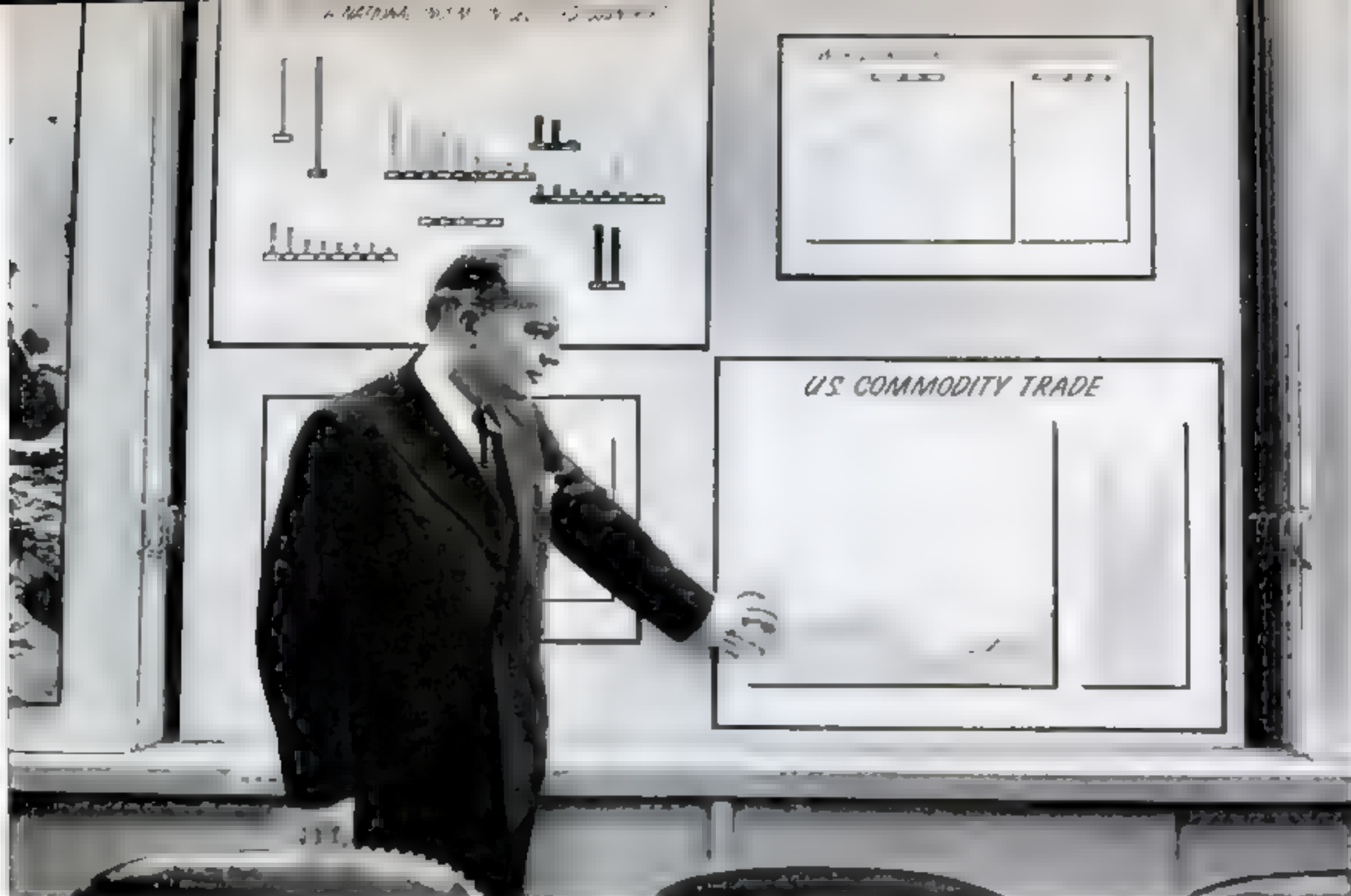
Even to start narrowing the gap between the American standard of living and that of the rest of the world, according to U.N. economists, would take ten times the present investment flow, something like \$20 billion a year. The only possible source of such sums is not governments but private investors, and not just American investors. Such sums require that every industrialized country should join and share the great work of investing abroad, especially in the underdeveloped lands.

Instead, private capital is everywhere either too scarce, too timid or too chained to undertake this adventure. American capital, seeing rewards at home and ambushes abroad, has little incentive to travel. European capital, what there is of it, would travel if it could—indeed it is chronically poised for flight to freer or safer countries—but it is forbidden to do so.

Trade and capital are both captive to the same forces of fear, imbalance and stagnation. The one captivity prolongs the other: for just as investment creates trade, so trade is a vehicle of international capital movements, by way of the savings of those who profit from it. Thus a double source of new wealth is foregone.

The third big snake in the pit of world trade is the peculiar stagnation of Europe. It is big because Europe still accounts for 40% of all world trade; because it has been the recipient of 80% of American aid; and because it has perfected, above other parts of the free world, the technique and habit of antidollar restrictions.

"Poor, tormented and split Europe," West Germany's economic minister calls it. Its clever people cannot, as at present organized, earn the standard of living they insist on in a world no longer theirs.



FEVER CHARTS on world trade's ills are kept on sliding panels in Harold Stassen's Washington command post. Grants like those

of his Foreign Operations Administration account for one tenth of all postwar world trade. But handouts are not the answer.

NEW, DARING PLAN CONTINUED

One sign of this is their low productivity, both in factory and farm, in comparison with the new standards set by the U.S.

Output per man in Europe is only 20 to 50% of the U.S. averages. Under the Marshall Plan hundreds of European "productivity teams" visited the U.S. to find why this is so. One English journalist gave his readers a three-word approximation of the principal reason: "Why do Americans produce more? THEY WORK HARDER," said he. A recent government study found that British bricklayers' time is spent as follows: one fourth, unavoidable delays; one half, voluntary pauses (tea, lateness, etc.); one fourth, laying bricks. The French building industry operates (says a former French minister of reconstruction) "in accordance with the best Merovingian standards." The personnel boss of Britain's nationalized coal mines, an old union miner himself, says, "It is true the men aren't working like they used to." The new British steel works at Margam took five years to build; the new Fairless works on the Delaware took 18 months.

The American worker enjoys many head starts to productivity, of which more and better machinery is one. Others are stronger money incentives (lower taxes), a livelier and harder-working management, and an industrial atmosphere which one English auto maker calls "liberalism," meaning willingness to try anything once, from a new market to a new way of grinding gears, and to back the experiment with plenty of money.

In short, the American institutional framework is more favorable to efficiency than the European, and a "divergence of productivities" has resulted. Some would date this from 1890, when Americans passed their Sherman Antitrust Act and Europeans began putting together their first steel cartel. Competition as the U.S. knows it scarcely exists in Europe now. Another possible origin of the cleavage is the fact that Calvinism, which took root only spottily in continental Europe, planted throughout America its unique morality of work. While we view work (and its by-product, wealth) as a path to salvation, the continental views it as the mark of Cain. The European businessman's vice of double bookkeeping expresses not just his hatred of taxes but something harder to deal with: his secret contempt for his own calling. This contempt, derived from feudal models, cascades down the hierarchic structure of Europe's industrial society. At the bottom, receiving its cumulative force, is the figure American industry exalts: the consumer. The fewer and more captive his customers, the better the European businessman likes it.

Labor fares no better than the consumer in this system. European business does not regard the auto worker or refrigerator assembler as a potential buyer of what he makes. The workman's production and his money wages are far higher than prewar, but his real income is not. The French Catholic bishops, in a recent survey of "the social situation" diocese by diocese, found that "almost all wage earners . . . are convinced they are the victims of organized injustice"

and that French labor's "most eager elements think in terms of a revolution by violence rather than consent." This has led, in France and Italy, to organized labor accepting Communist leadership while men of foresight tremble for the future. "Europe above all else needs new ideas," says Adriano Olivetti, the progressive Italian manufacturer. ". . . Otherwise, our society will passively accept an omnipotent state, whether Communist or Fascist, within 10 years." Says Paul Reynaud of France, "More reforms are needed than in 1789."

Yet this is the continent that once produced 90% of the world's manufactured goods, that is still the world's second-best workshop, and that has moreover exhibited since the war remarkable powers of recuperation. Industrial production in most countries is now 50% ahead of pre-war years. Why, then, has its standard of living remained stagnant?

The answer lies in the foreign trade by which Europe lives. Since the war this trade has undergone an enormous foreclosure. Its currents once ran to every continent and market. But Russia, Eastern Europe and half of Asia have been foreclosed by Communists, and the rest of Asia by the poverty that has accompanied the end of the colonial age.

Even where trade is still comparatively free, the terms of the old bargains have changed against Europe's manufactures. To get enough food and raw materials to live in its accustomed style Europe has had to rely more and more on the only source where their supply has greatly increased: the U.S. and Canada, dollarland. To make this harder, Europe's old investments in North America, once an easy source of dollars, have been largely liquidated. Britain, before the war the world's largest creditor, is now its largest debtor. Europe is like a great ship that used to stand in the roads surrounded by dhows, sampans and lighters but is now sou'ging and listing by a New York dock.

More trade—where?

If the great ship is ever to leave her berth toward an expanding horizon, Europe must find more trade. Where?

Some seek it within Europe itself, in economic unity or "integration," the unachieved goal of the Marshall Plan. If Europe's factories confronted a single market of 200 million people, they would be virtually forced into America's standards of efficiency. One of the most hopeful things in Europe today is Jean Monnet's "High Authority" in Luxembourg, the fully functioning government of all the coal and steel in France, Germany, Italy and Benelux. Little by little, with the broad powers given it by treaty and the suasive powers of the personality at its head, the High Authority is whittling away national barriers against a common European market in these two products and is valiantly combating the tendency to recartelize. But the more these small barriers are removed, the larger looms one that Monnet cannot touch. This is exchange control, by which European currencies defend themselves against the dollar, but which at the same time keeps them at swords' points with each other.

CONTINUED ON PAGE 53

a diamond is forever



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1/4 carat (25 points) \$85 to \$190
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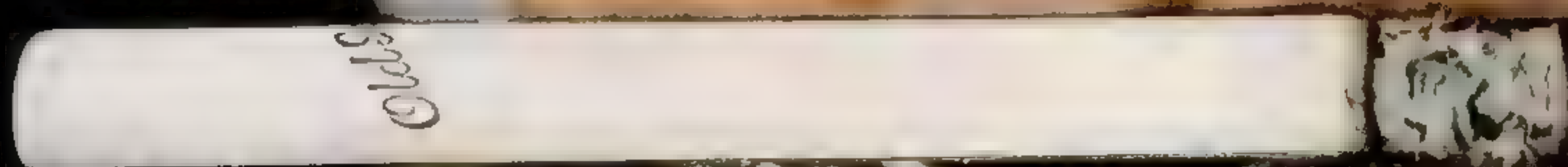
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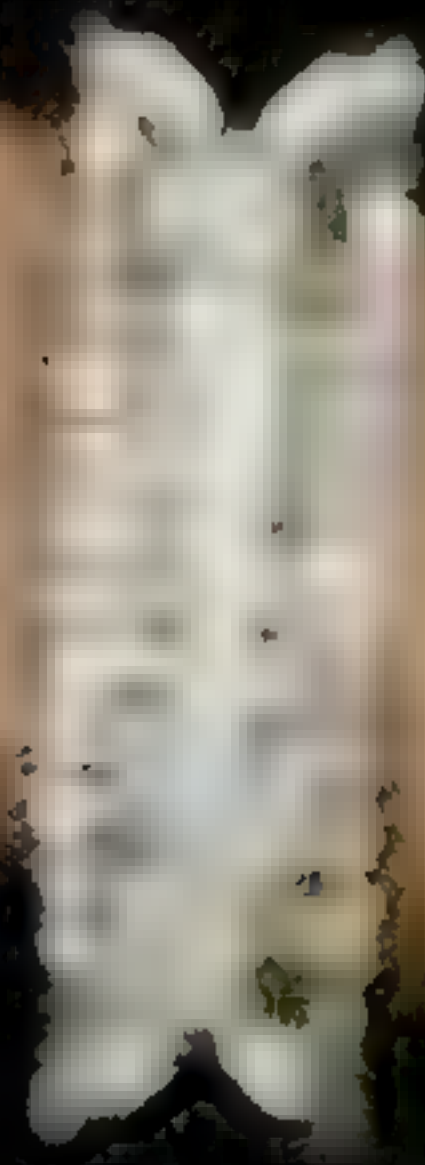
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NEW, DARING PLAN CONTINUED

respectable currency what virtue was to a lady—part of the definition.

The reason this system created so much prosperity was that it continuously allocated and re-allocated the resources of nature to their most efficient uses over the widest possible area, just as the economic textbooks promise under competitive conditions. Americans can look back on how the process worked in the smaller but continent-wide laboratory of our own tariff protected market—our "playpen," as somebody has called it. The trail to our present wealth led through mushroomed cities, ghost towns, fortunes, bankruptcies, mergers, migrations, trials and errors, all attesting to the rigor of the second demand of economic progress: after work, mobility.

This international mobility of men, money and materials kept the balance-of-payments problem unknown in those days. Having in effect a single currency (in that all currencies were mutually convertible), the citizens of this economic universe could trade with each other without worrying about their particular nation's trading position except as it showed up in prices, whether of goods or of foreign exchange, which prices in turn presented yet another trading opportunity.

The U.S., while protecting its growing industries against European competition, helped the world market system by its hospitality to immigrants and to foreign capital, thus encouraging massive movements of men and money from less to more productive work. The U.S. protective tariff doubtless hastened our growth, but the general environment outside our shores, so favorable to free enterprise and expanding trade, was indispensable to it. Into this invigorating ambiance Americans ventured when and where they chose, testing their increasing efficiency in the great world market—the only real test of efficiency, incidentally, that economic science knows. This atmosphere of economic freedom was so long taken for granted that Americans came to consider it their birthright, or even a law of nature. Unfortunately it is a law only in the textbooks—and in the past.

As a textbook law the classical theory of world trade is still good economics. Keynesian "neomercantilists" scoffed around its edges but never refuted or replaced it. Its enemies are not thinkers but governments.

These did their most destructive work in the '30s. Hjalmar Schacht, the Nazi genius, showed how one rebel nation could prey on the comity of the rest. His ruthless devices for controlling German trade and money were refinements on the desperate methods discovered by the belligerents of World War I and examples for the still stricter controls of World War II. Chief among them were the rationing of foreign exchange, the quantitative import quota and the government monopoly of trade in key commodities.

Seven years after the end of World War II these controls, especially exchange controls, are still in effect in almost all so-called civilized nations. The only major "respectable" currencies today, and the only people with free access to all foreign currencies, are those of the U.S., Canada and (with some qualifications) Switzerland.

Elsewhere the wartime shackles are still firmly in place. The world environment of freedom has disappeared.

Some argue it never will return. The governments who destroyed the free system, this argument runs, were responding to deep popular social trends, sometimes called "the flight from the market." The people of Europe, farmers and workers as well as businessmen, have grown fond of the restrictions that impoverish them. The mobility of resources is out of fashion. Large-scale migrations are politically unfeasible. Social security, full employment, leisure and a gentler life reconcile modern Economic Man to his loss of forward motion. His mood is that of Byron's Giaour: "I would not if I might be blest; I want no Paradise but rest."

Like the argument for any tolerable *status quo*, this one has some force. But it does not tell us how to improve matters. It is therefore inaudible

to the American ear, and in fact is scorned even by many Europeans, two of whom deserve our special attention.

In the most exciting nation in Europe today, West Germany, the most unusual political figure is the Minister for Economic Affairs, Ludwig Erhard. The man and the nation have made good together. West German industry is booming, its currency is hard, its people are busily employed at that most innocent of human endeavors, getting rich. Much luck went into the German recovery, and its extent should not be judged by its speed; it started only five years ago when the

German economy was flat on its back. For all that, it has been one of the most striking examples on record of the efficacy of classic economic principles, which principles Erhard, himself an economist, understands, believes in and has put to work. Erhard's policy for Germany has been one of continuous decontrol. High taxes, the price of a sound currency in this age, are about the only remaining internal drag on German energy and thrift.

Erhard is the world's loudest spokesman for the convertibility of currencies and for the fiscal self-discipline, such as Germany has imposed on itself, that makes convertibility possible. The Germans, he says, "must become the teachers of Europe." He regrets the discriminations that Germany, as part of Europe, feels it necessary to practice against the dollar. He does not indulge in the European custom of blaming all his troubles on the U.S. tariff.

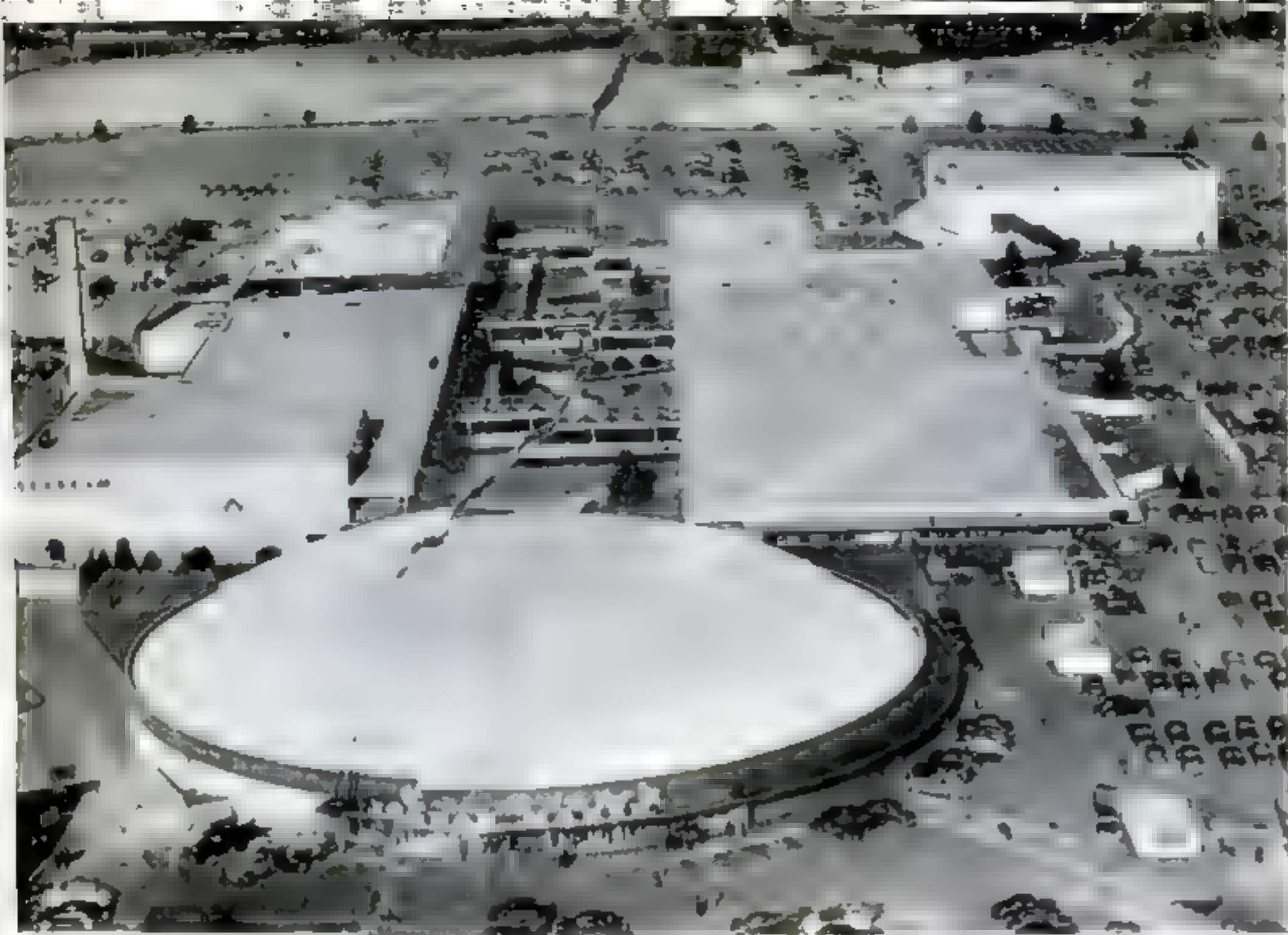
Even if the Germans wanted to, they could not in practice throw off the Iron Lung and declare the Deutschmark convertible tomorrow. Among Europeans leadership in monetary matters still belongs to the British pound, which despite its weakness still finances more world trade than any currency. No British voice speaks as loudly for convertibility as Dr. Erhard's, but what the British say commands more attention.

The British have been twice shy of convertibility ever since they tried an ill-prepared experiment in it in 1947. On that occasion so many of Britain's many creditors turned in their pounds for dollars that London's gold and dollar reserves were almost exhausted and the experiment had to



PILOT MODEL for European economic integration is being made in Luxembourg headquarters of Schuman Plan's High Authority for Coal and Steel.

CONTINUED ON PAGE 51



PATTERN FOR INTEGRATION in Europe is mass selling as done in 14-store "Shoppers' World" (above) near

Boston. If Western Europe were economic unit, better methods would be needed by its 200 million customers.

NEW, DARING PLAN CONTINUE.

The chief survival of the Marshall Plan effort at "integration" is a Paris bureau representing 18 nations called O.E.E.C. (Office of European Economic Cooperation). It encourages intra-European trade by setting "liberalization targets" (a percentage of trade free of quotas) and by financing mutual balances through the European Payments Union. Far from increasing European unity, however, O.E.E.C. barely keeps things from flying apart. Its members, though protected against the dollar, remain wildly out of balance with each other. They are constantly backsliding on their liberalization targets whenever they get into "balance of payments difficulties." France has become a chronic backslider, observing no targets whatsoever. Even well behaved countries like Belgium refuse to remove quotas on farm products because their farmers refuse to compete even with their next-door neighbors. Indeed "balance of payments difficulties," the formal excuse for mutual restrictions, has become a mere mask for old-style protectionism, which is more entrenched in most of Europe today than it was before the days of anti-dollar discrimination. The O.E.E.C.-E.P.U. machinery is at best a kind of iron lung for Europe's internal trade, rather than a rejuvenator that would make her trade healthy again.

Another way in which Europe could increase its trade is with the remnants of its former empire, chiefly Africa and the British Commonwealth. The obstacles here are twofold. First, what little capital Europe has to spare does not gravitate as willingly in this direction as it does toward dollarland. Second, the undeveloped members of the potential new empire refuse to be organized into an exclusive arrangement. The superior magnetism of the dollar throughout it keeps a new empire from taking shape. To overcome this obstacle would require stronger measures and harsher controls than most non-Socialists would stand for.

For a third way to increase its trade Europe looks to the Communist world. The prospects are pretty slim. The old Balkan wheat surplus that used to feed Germany is now swallowed up in Russia's hunger, and the old Balkan appetite for machinery is strictly controlled by Russia's master plan. Small as it would prove to be, however, the idea of East-West trade exerts a powerful pull on

the European imagination. It grows harder every month for the U.S. and Europe to maintain a united commercial policy toward the iron curtain. The list of strategic materials which the British will not sell to China, for example, seems longer than necessary to them, shorter than desirable to us. Here, as Stalin predicted, is the seed of division in the Western alliance.

Toward East-West trade there is only one safe position for the West: to be able to take it or leave it alone, as Western strategy—not Moscow's—makes advisable. The U.S. is in this temptation-proof position. Europe could be—if we could find some other way to expand European trade. The only other way that exists is to unlock the opportunities within the free world.

A key to a big job

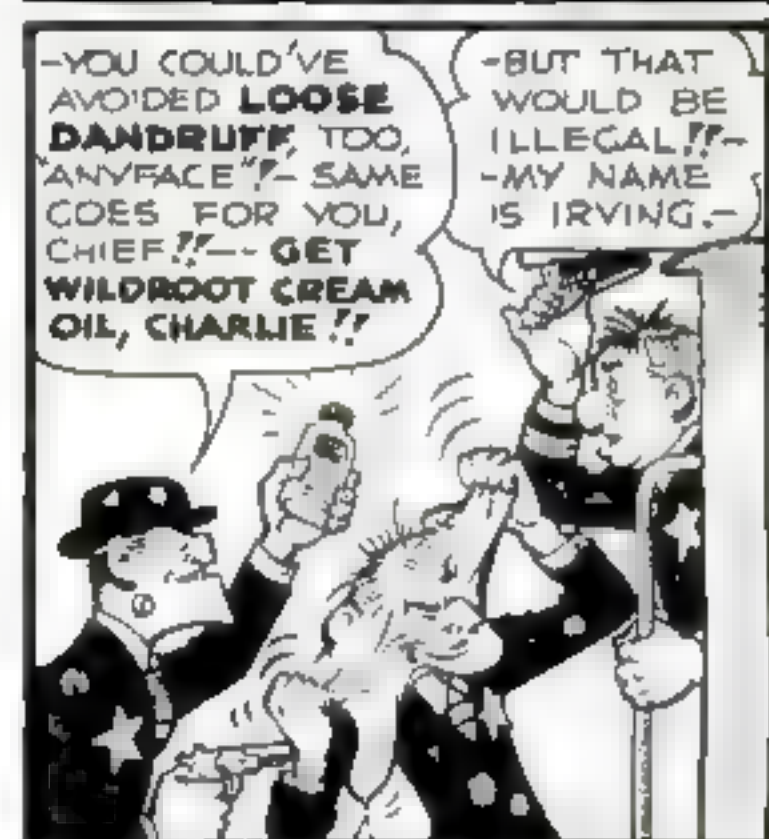
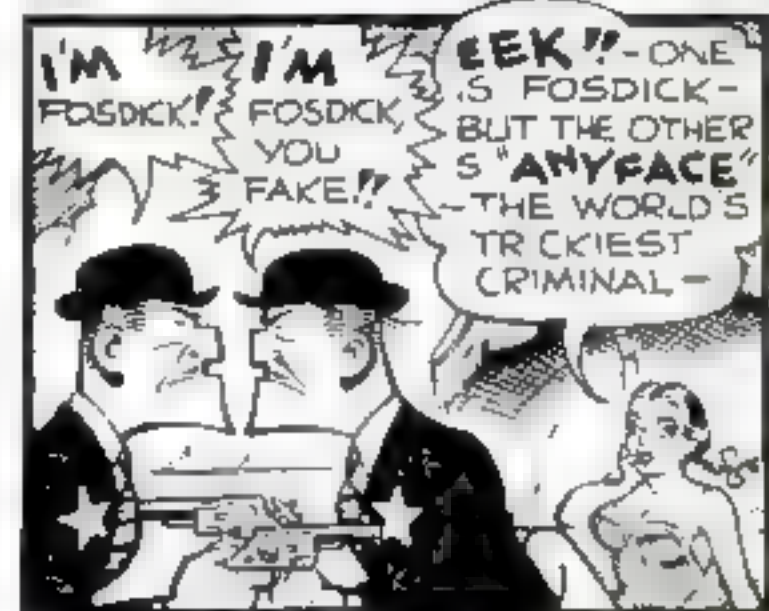
ENOUGH of the snake pit. It appears that the task of raising the world's standard of living is a formidable one. He who would set about it must somehow correct the imbalance in international payments, revive foreign investment and reform the arthritic capitalism of Europe. The diagnosis is gloomy and so is the prognosis. But it is not as though no cure were known.

During Britain's economic hegemony, world trade, investment and living standards expanded at record rates. Of that age, two things are noteworthy: first, it lasted as long as the British were willing to underwrite it, and no longer—i.e., from about 1846 to 1931; second, the conduct of the nations and of foreign traders accorded more closely than usual with good economic theory.

The people of Britain during their free trade period in effect maintained a true world market by offering a price for anything anybody wanted to sell. They backed this policy by a stable currency, the pound, readily obtainable the world over. Private firms made unsupervised bargains across national boundaries just as a Boston merchant buys in New Jersey and sells in California. Tariffs and a few military subsidies were the only ways in which governments tried to deflect or limit trade for reasons of state. Above all, currencies were almost universally convertible. This means that every citizen of every country was free to earn and spend the currency of every other country. Full convertibility was in those days to a

FEARLESS FOSDICK

by AL CAPP



CONTINUED ON NEXT PAGE

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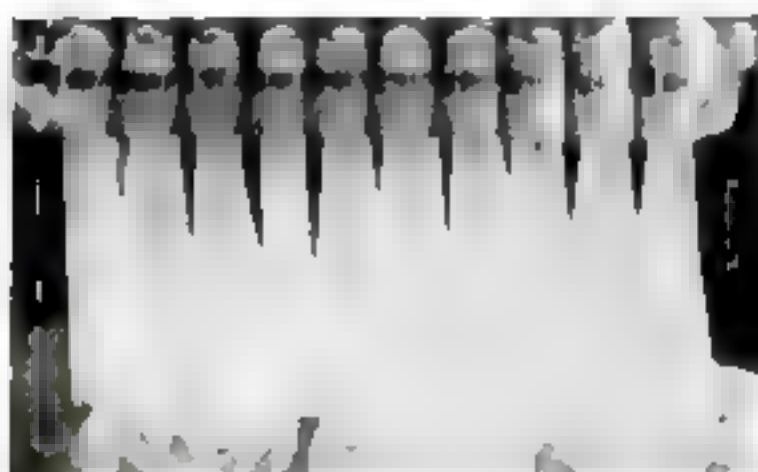
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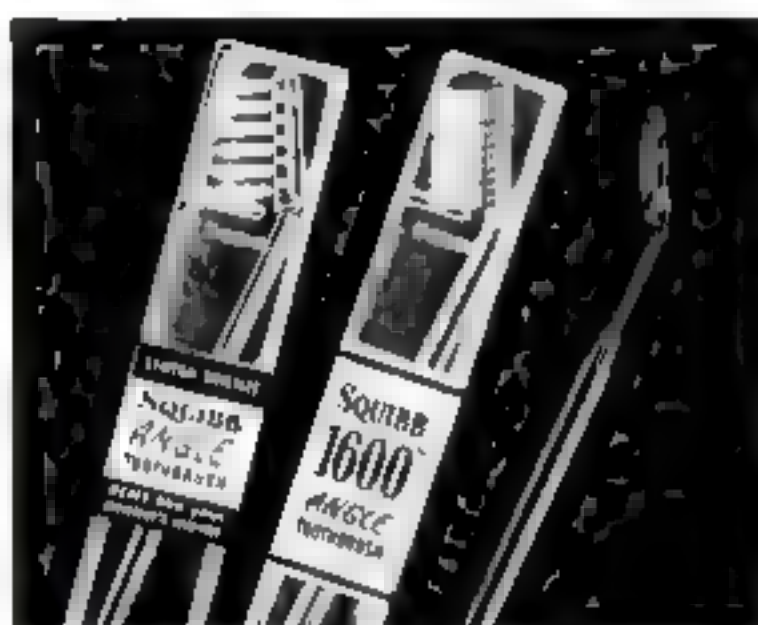
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NEW, DARING PLAN CONTINUED

be called off within five weeks. Last March, however, Mr. Churchill's Chancellor of the Exchequer, R. A. ("Rab") Butler, came to Washington to sound out the sentiment of the new Republican Treasury people, Messrs. Humphrey and Burgess. The British laid down two conditions for another experiment in convertibility. First, the U.S. would



BUTLER of Britain got U.S. rebuff on plan for partial convertibility now.

have to back British gold or dollar reserves with a loan or guarantee. Second, to be able to defend a convertible pound Britain must see better prospects of continuing to earn dollars, or at least not lose them, by current trade: meaning that the U.S. would have to liberalize its import policy.

These two conditions are probably the least that would be insisted on by any nation contemplating convertibility today. Moreover they come reasonably from any nation

which, like Britain, has shown fiscal self-discipline at home. The rest of the British proposition of last March, however, gave the whole the watered-down effect of Britain's wartime beer: not full, but just "external" convertibility was the proposition. People outside the sterling area would be able to trade their pounds freely for dollars, but people inside it would not. Butler evidently wanted to restore the prestige of the pound among the lesser breeds but could not yet trust Englishmen to refrain from capital flight.

The March talks came to nothing. Messrs. Humphrey and Burgess were unready to do their part. Perhaps they also expected a better proposition and not getting it began to doubt how serious about convertibility the British are. If this has been the reason for their own subsequent inaction, the men of the U.S. Treasury are making a bad mistake. For whether or not Butler and his friends are as serious about convertibility as they should be they are certainly more serious about it than their political opponents.

While the British position remains so precarious that responsible Tories do not consider convertibility a near possibility, they would respond in good heart to a realistic proposal from Washington on this subject. The same cannot be said of the Socialists. Convertibility plays no part in their picture of Britain's future. Favoring, as they do, policies which they know will repel capital from England, they also know they will need exchange controls to stop its flight. If convertibility is to be achieved, therefore, it must be achieved before the Socialists return to power.

Convertibility, before we leave the subject, is not the whole answer to the problem of increasing world trade. It is easy enough to make your currency convertible if at the same time you overprice it or otherwise make it impossible for others to earn. Import controls, the obverse of exchange controls, can be used to get the same nasty effects. Thus the O.E.E.C.'s "liberalization targets" have done some good as a reminder that quantitative restrictions on trade can be as bad as those on currency. Alongside either of these streamlined archdiscriminatory weapons, of course, a protective tariff looks as inoffensive and old-fashioned as a Zulu warrior's shield of buffalo hide.

If the U.S. seriously wishes to re-create a world market and a system of economic freedom, it must first of all achieve a system of world money, i.e., fully convertible currencies; and to support and use this world money, a system of multilateral trade among individuals of different nations, the

barriers to this trade being as few as possible, and in any case operating impartially, as tariffs do, without discrimination.

No European nation, not even Germany or Britain, is capable of leading its neighbors into this system. The leadership will be American or none; and to take it the U.S. must find and use the weapons that will induce or force the Europeans to follow. Our weapons must be such as the Europeans can neither withstand nor refute. We have only two suitable weapons that combine force with an appeal to our shared economic wisdom. They are 1) the dollar itself, and its great strength; 2) our domestic market, the biggest in the world.

If we grasp and use these weapons aright, we have the makings of a gigantic deal.

Here is the deal, in two connected parts. One: to nations willing to abandon exchange controls we will lend (not give) the gold or dollar reserves a newly convertible currency requires. Two: against import quotas and other quantitative trade restrictions we will bargain our protective tariff.

The deal on reserves could be handled in many ways: a straight convertibility loan of gold or dollars, or a joint stabilization fund of several leading currencies as proposed by the International Chamber of Commerce, or a change in the rules and an enlargement of the assets of the International Monetary Fund. As a somewhat tricky and politically more difficult alternative the U.S. could simply raise the price of gold; to double the price would double the reserve value of Europe's gold holdings overnight. Each of these methods has its virtues and drawbacks, needless to discuss here. Each would remove the first obstacle to convertibility.

The second part of the big deal, like anything that involves the U.S. tariff, is a good deal more complicated. Protectionism, more particularly protection against European manufactures, is the most venerable policy the U.S. has.

Hamilton's protectionist Report on Manufactures is one of our great state documents. The Monroe Doctrine itself, later born and sooner faded than protectionism, came into the world wrapped in a high tariff message. And the nationalistic "American system" first popularized by Henry Clay runs triumphantly through our economic history from canals and the Homestead Acts to TVA.

Politically the U.S. has never had a national free trade party. The Democrats have usually opposed and moderated Republican tariff greed but not for free trade reasons. Thus Cleveland reduced tariffs on the plea of an embarrassing revenue surplus ("It is a condition that confronts us, not a theory"), and Wilson as an antitrust measure, to "whet American wits." The Reciprocal Trade Agreements policy, which has been kept alive by bipartisan support for the last 18 years, is anything but free trade. Despite all the tariff concessions made under it, no American industry has lost its protected home market to foreign competition. The Democrats always considered it more important that RTA be repeatedly extended than that it influence trade. The complaints against it, both before and after the "escape clause" amendment of 1948, were always marginal and somewhat phony, for its administrators never contemplated a serious reallocation of resources with any foreign country, least of all Europe.



ERHARD in Germany has proved that internal decentralization can work magic.

CONTINUED ON PAGE 51

Recently an Australian business editor, visiting the U.S. on the last lap of a long trip to report on the world's economies, was asked what impressed him most about the U.S. economy.

"You are over the hump," he said.

"What do you mean, over the hump?"

"Your efficiency," explained the visitor, "has brought you to the point where consumption is increasing, so to speak, in geometrical ratio—the more you consume, the more you can produce, and the more you can consume. While the rest of the world is trying to struggle up the rocky road to that point, you have long since passed it. In fact, you are picking up momentum, and fast increasing the distance between yourselves and the rest of the world."

He put it well. He had grasped probably the most significant fact about the current American economy. That fact is that the U.S. has become what might be called a consumption economy. And the corollary to that fact is that one of the most important economic problems of our times is to keep consumption rising with production.

Fortune, September, 1953

If you create, design, package, distribute, advertise or sell consumer goods, then this is your problem: to keep consumption rising with production.

And if your business is supplying the plants or machinery or materials which help consumer goods manufacturers to make their products more salable, then it is also your problem—and your opportunity.

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PROTECTIONIST PARADOXES abound. Left, Britain's Cartoonist Low has Stalin, Marx and Lenin rejoicing

as U.S. fights off would-be traders. Protected goods (center) include many which Europeans make better (watches, hats,

NEW, DARING PLAN CONTINUED

The main value of the RTA system is that, in giving the White House wide discretionary power over tariff rates, Congress swore off its age-old habit of logrolling all the rates upward every few years. Congress never managed to learn self-control on this subject; its tariff debates, as George Dangerfield put it, "have always had a dull and ugly appearance, like an alligator pretending to be a log." The late Senator Vandenberg once declared, "Tariff rate-making in Congress is an atrocity. It lacks any element of economic science or validity. I suspect the 10 members of the Senate, including myself, who struggled through the last Congressional Tariff Act (1930), would join me in resigning before they would be willing to tackle another general Congressional tariff revision."

An earlier effort to "take the tariff out of politics" was the movement for a so-called "scientific" tariff, which created the U.S. Tariff Commission (1917). The theory of a "scientific" tariff was not, however, scientific. It aimed to equalize the costs of foreign and domestic products, especially the labor cost, and many an American businessman, including the Secretary of Commerce, Mr. Weeks, is still of the opinion that the "American standard of wages" is the one thing that cannot safely be subjected to foreign competition. But the equalization principle, carried to its logical extreme, would exclude all imports whatsoever. As the first chairman of the U.S. Tariff Commission, Professor Taussig, once put it, "very good pineapples can be grown in Maine"—if you don't care what you pay your labor. The only scientific theory of international trade prescribes competition among all costs, including wages. It also promises that wages will correspond to productivity. If American productivity remains the world's highest, so will American wages, whether protected or not.

The RTA has not noticeably affected U.S. imports because it is based on the equalization theory rather than on a theory of the international division of labor. It bargained U.S. tariff concessions against tariff concessions by other countries. But in most foreign countries tariffs were obsolete anyhow, having been superseded by quotas and exchange controls. Thus RTA did not help U.S. exports either. Its bargains were not the real ones required to increase trade. A genuine bargain would permit foreigners real access to our markets—i.e.,

we would risk losing business to them in a true reallocation of resources—in return for better and fairer access to their markets—i.e., through convertible currencies and removal of quotas.

Such a bargain could not be struck, and should probably not be attempted, between the U.S. and every other nation in the free world. This brings up still another feature of the RTA system which inhibits meaningful trade bargaining. This is our unrealistic use of an excellent principle, that of the Most Favored Nation. Each tariff concession we make to any nation is immediately "generalized" to about 30 other nations, many of whom do not deserve it and could not qualify for the kind of bargain here described. If we are to put an end to discrimination, we must ourselves discriminate in favor of those who are willing to end it. This suggests a double or multiple column U.S. tariff, the most generous column being reserved for like-minded nations whose citizens would trade freely with us and with each other and among whom the Most Favored Nation clause would regain meaning. They would be the expanding nucleus of a convertible, no-quota, low-tariff free world.

Condition, not theory

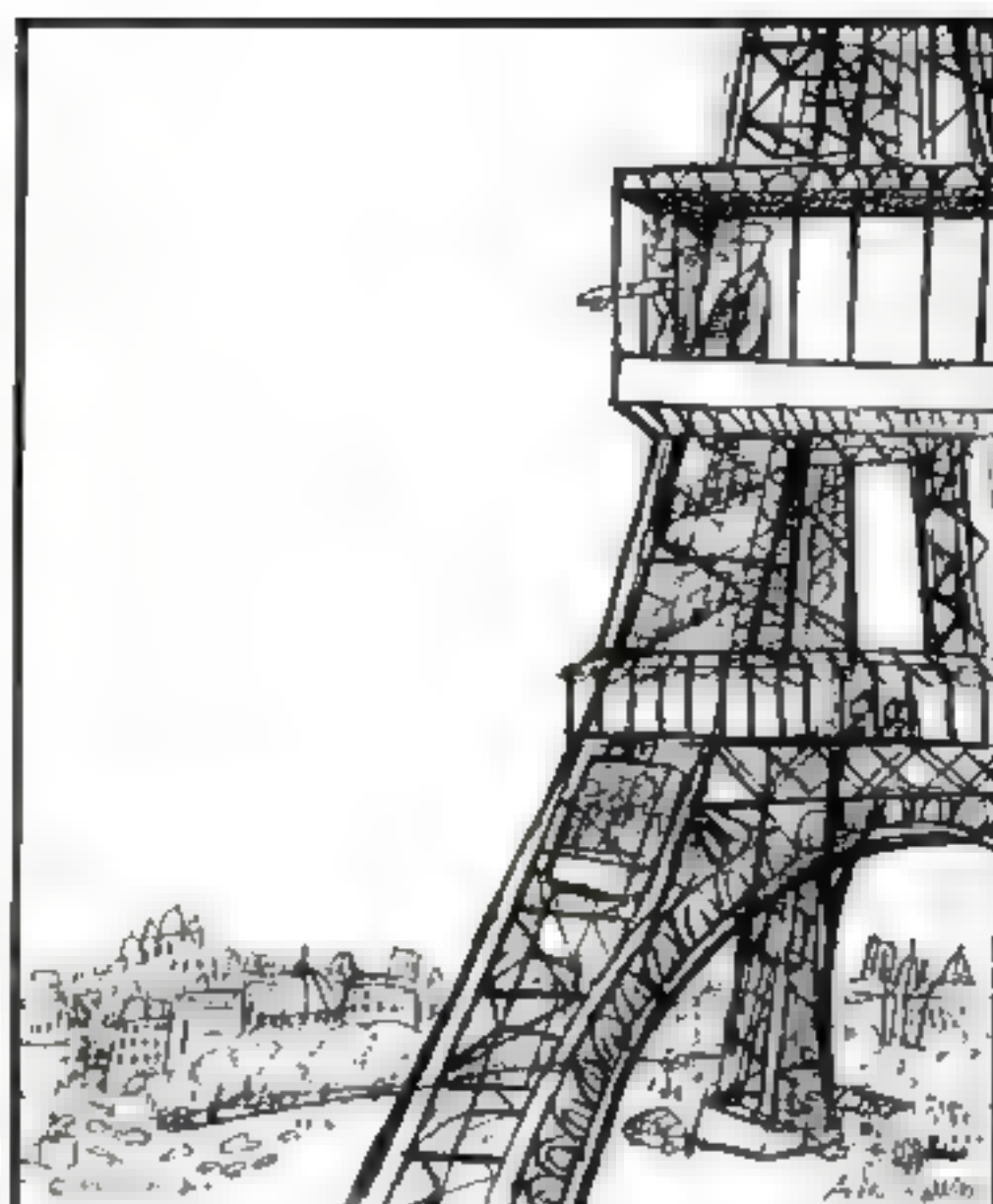
SUCH, nakedly and formalistically, are the terms of the gigantic bargain by which the U.S. might hope to re-create a world market. In real life, of course, no single treaty embodying these terms is likely to be signed, nor will the new U.S. policy it requires ever be entered in the history books bearing a single date. For as in Cleveland's day it is a condition, not a theory, that confronts us, and neither partner to the deal can deliver so easily as here assumed.

On our side a quick look at the protectionist interest will disclose some of the difficulties. Our most protected industry is agriculture, and, as the *London Economist* once put it, "the manufacture of feather beds for farmers is [America's] main competitive industry for the Congressionally inclined." For our farmers (and them alone) we even shamelessly employ the European device of import quotas. The overrepresentation of farmers in Congress is likely to hinder our government's trade bargaining position on farm products for some time.

But not necessarily forever. The new Secretary of Agriculture has begun the appalling task of



Spanish guitars) and nonessentials like toys. At right, London's *Punch* satirizes effects of Britain's own type of



protectionism in currency restrictions with tourists who cannot afford to go to top of Eiffel Tower, stop part way.

getting our farm price support program back into some sane relationship with world markets. On these markets our farmers depend, for they are still our No. 1 exporters. Moreover, owing to our appetite for coffee, bananas and other exotic edibles, the U.S. is the largest importer of farm products and has been a net food importer since 1911. In other words the U.S. is already deeply involved on both sides of the world food market, and there is no economic reason why we should not gradually become more so.

Among other industries that depend on protection, or think they do, the most important are chemicals, electric, textiles and mining.

The chemical industry was born in World War I under a very special tariff on coal tar derivatives. It is now largely a petroleum processor of enormous technical proficiency. In hugging protection its leaders may well be exhibiting a reflex dating from their youth rather than a knowledge of how they would really fare under competitive conditions.

Westinghouse is outspokenly against European competition; General Electric is more ambivalent on the subject. This industry is already losing capital goods business to foreign competition. But its over-all sales abroad are more than 20 times U.S. imports of electrical products.

Textiles would lose an unpredictable amount of business without the protection they have enjoyed for 150 years. Mining, especially the high-cost lead, zinc and other nonferrous minerals of the West, presents a political problem akin to farming, with the following difference.

U.S. industry as a whole has a mounting interest in getting the cheapest ores in the world. The U.S. recently changed from a net exporter to a net importer of basic industrial raw materials, even petroleum. We have "crossed the great industrial divide." Our voracious industry consumes more than half the world's supply of a long list of irreplaceable natural resources. Our steel industry, for example, is developing new sources abroad, just in time to help replace the dwindling high-grade ores of the Mesabi. Our copper mines, formerly exporters, now supply scarcely 60% of U.S. industry's consumption of new copper. U.S. industry's interest in these growing foreign sources, most of which need capital for enlargement, will increasingly align itself against the domestic miner's interest in a high tariff. The latter's protection will then take the form of a straight subsidy for

mines that can claim support for military reasons, as is already the case with domestic uranium, or as is largely the case with another important non-competitive industry, shipping.

Still more vulnerable to deprotection are a host of specialty manufacturers such as pottery, gloves, lenses, hats, watches, motorcycles, toys. The removal of their tariffs would force many of them to cut costs, change their market or go out of business. The Randall Commission has been offered schemes to indemnify their owners and retrain their labor at public expense. Yet the degree of dislocation would not be unusual from a national standpoint. Every month, in the great churning of our industrial process, some two million workers change their jobs, mostly of their own volition. Well under one million jobs in the U.S. are clearly tariff-dependent, whereas over four million are dependent on foreign trade—and are therefore in jeopardy right now.

The picture of European imports swamping whole sections of the American market is quite unreal. Europe lacks the productive capacity to swamp any American market. A likelier prospect is that the role of European imports in our domestic consumption might recover from the present of less than 1% to something under 2%, a level they enjoyed as recently as 1929. In a context of expanding trade, rather than of substitution, the U.S. could swallow this improvement in its standard of living without a belch.

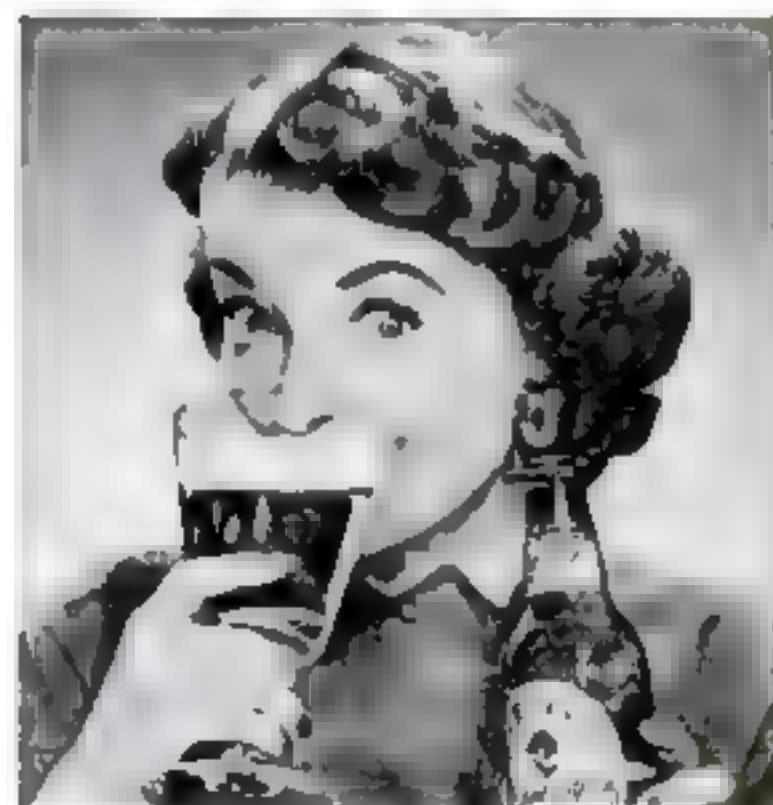
But from Europe's standpoint, too, the importance of the U.S. tariff is easily exaggerated. It is not the main reason Europeans do not sell more here now. There are more insidious forms of U.S. protectionism, such as the "invisible tariff" of customs rules, and the Buy American Acts, passed during the Depression to combat unemployment and never repealed. There is above all the insecurity of the American market. The foreign exporter fears that if he exploits it successfully—and such exploitation is very expensive—he will then be penalized by a new tariff inspired by his very success. The "escape clause," a standing warning to Europeans not to do too well here, prevents many of them from even trying. No particular tariff rate, therefore, is nearly so important to Europe as is the trend of U.S. tariff policy and sentiment. Rather than a big hello for their goods, exporters would like to see a durable welcome.

The U.S. protective tariff is not likely to be dropped overnight. Nevertheless it stands to go

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NEW, DARING PLAN CONTINUED

on losing political support, as it has already lost its once respectable intellectual justification. Protection is incompatible with any rational foreign economic policy for a large creditor nation, especially so powerfully competitive a nation as the U.S. The irrationality of our tariff must work against it in the long run. If the present Republican administration can confirm this trend, then Europe may come to realize that America is going through a great mid-century wheeling maneuver, not as orderly as might be, but pointing to a new age of freer trade. Thus our part of the bargain would be fulfilled.

Toward a new age

AS for Europe's part of the bargain, we can expect no overnight reform there either. Convertibility will be difficult enough, and the problem is also to restore European industry's lost habit of mobility. This will require strong and continuous pressure on every available front. U.S. embassies will need to make their own daily bargains and interventions on behalf of freer enterprise, U.S. style. U.S. policy must make all kinds of alliances with Europe's progressive, competitive-minded businessmen, of whom there are a few at least in every country, even France. Tariff reductions would greatly help this reform. Short of allowing massive immigration, nothing we could do would deliver such a shock to Europe as dramatic tariff reform, and a shock is what Europe needs. In a commingling of U.S. and European producers and markets, with all the dislocations and renewed mobility it portends, American standards of wages, selling and production could directly influence the European, and the two versions of capitalism would gradually get back "in sync."

There is one other reason why the U.S. tariff belongs at the center of the grand bargain we hope to strike. Apart from money, it is the only major weapon we have left.

Some able economists do not think we have even that weapon. John H. Williams, for example (a member of the Randall Commission), seems to favor tariff reduction to ease the imbalance of payments but believes that Europe must also be permitted to continue discriminating against the dollar, even if tariffs are cut. In effect he asks the U.S. to discard protection as a gesture of penitence and example, without seeking any *quid pro quo*.

It would of course be uncharacteristic of Congress to do this. But it would also (and this is not always the same thing) be foolish. Inconvertibility with the dollar hinders Europe's trade in every other direction; to let it remain inconvertible would virtually guarantee that Europe will become the permanent economic backwater Professor Williams thinks it is now. We owe it to Europe to be tough on this point, since Europe is incapable of renouncing discrimination without our pressure.

In all conscience the broad terms of our bargain are generous enough. If at first our convertibility club seems rather exclusive, those outside it will be beneficiaries too. For a country hell-bent on autarkic self-development, such as Indonesia, the club will develop more of the capital Indonesia requires than is being developed now. If successful, the club will not be exclusive very long. But its rules and purpose must be quite definite: convertibility, no quotas, no discrimination, freer trade.

If this purpose is achieved, it will be a very good bargain for the U.S. It will mean a broad expansion of world trade and investment, which our economy needs far more than it needs any particular industry within its shores. The stakes outside are far higher. American nationalism has indeed an unfulfilled historical mission: to find its common ground with the self-interest of other nations and on that ground re-create its own birthright, an environment of progress and economic freedom.



RANDALL COMMISSION, whose job is to find way out of long-stalemate foreign economic policy debate, meets with President, who faces Chairman Clarence Randall, Chicago steelman. In front, from left, are Banker Jesse Tapp, Economist John H. Williams, Ohio's Representative John Vorys, Steel Union Boss Dave McDonald, Capitalist Jock Whitney,

Connecticut's Senator Prescott Bush. In rear, from left, are Alabama's Representative Laurie Battle, Tennessee's Representative Jere Cooper, Industrialist Cola Parker, Georgia's Senator Walter George, New York's Representative Daniel Reed, Colorado's Senator Eugene Millikin, Businessman Lamar Fleming and Virginia's Senator Harry Byrd.

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STEADIED BY HYDRAULIC JACKS (BOTTOM), THE JET PIERCER SENDS AN OXYGEN-AND-OIL FLAME INTO THE TACONITE FROM A TALL DRILLING PIPE (RIGHT)

A HEDGE AGAINST TOMORROW'S SHORTAGE OF IRON ORE

TOUGH TACONITE YIELDS TO NEW TECHNOLOGY

Screaming and flaming, the powerful "jet piercer" shown above performs the first step in a vastly important new way of producing iron from low-grade ore in Minnesota near the fast-diminishing high-grade Mesabi iron deposits. With a jet of searing (4,500°F.) flame, the huge piercer goes through a tough variety of ore called taconite—the hardest rock quarried anywhere in the world—to drill holes for blasting. After the ore has been blasted out, tiny iron particles are separated from the taconite by

a complicated process and shipped off in pellet form to the steel mills.

The mining of taconite has brought a sudden whirl of industrial activity to unsettled parts of northern Minnesota. It has also brought new hope to steelmakers and to economic planners, who had feared that the U.S. was slowly running out of iron ore. In taconite they have an assured future source, for while this ore is expensive to process, the costs are expected to go down and the supply of taconite will last for centuries.

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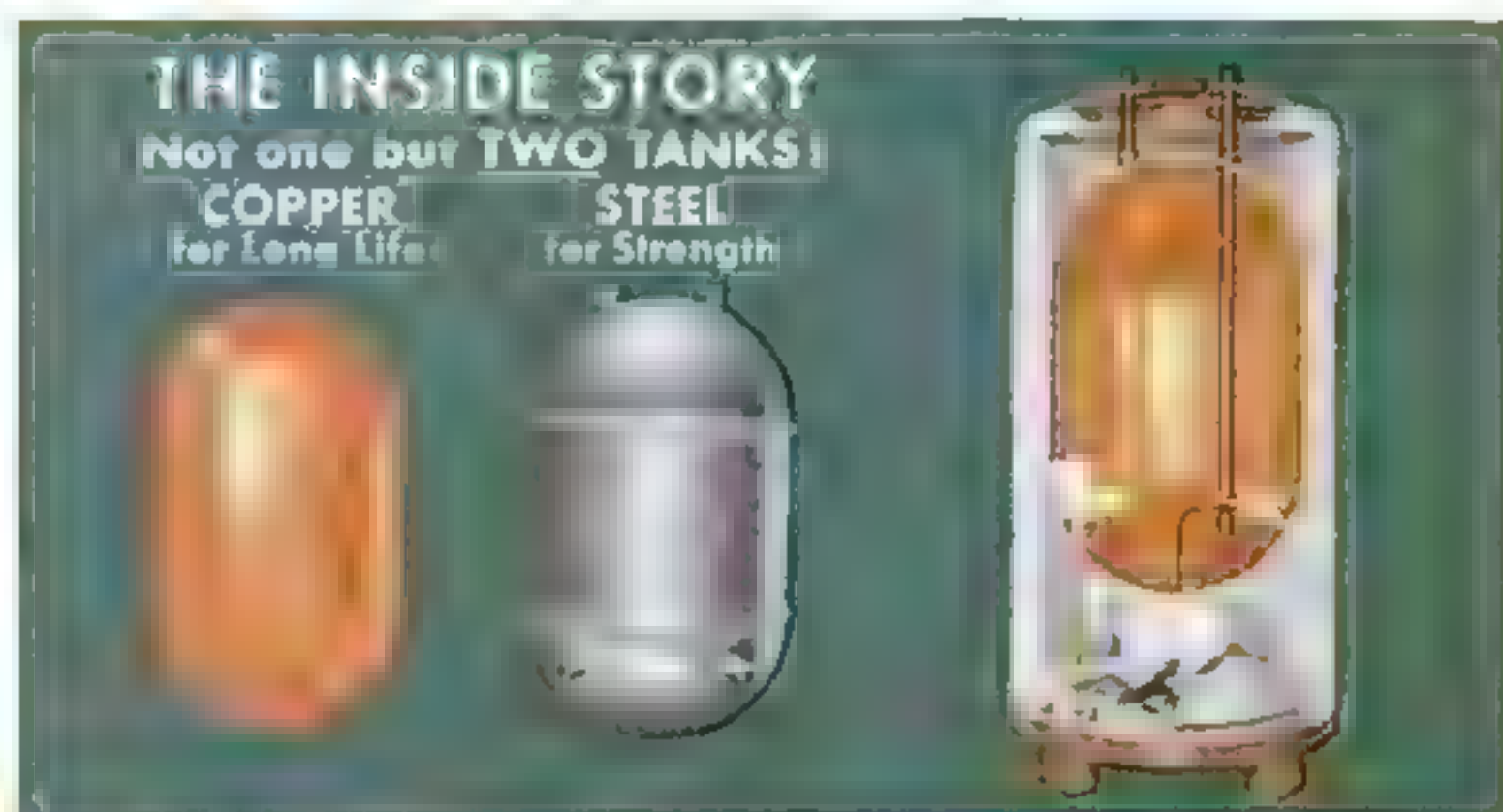
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This pure-copper-tank water heater will also give you long extra years of better service, at lower cost per year! Purer, clearer water too, because copper cannot rust ever—and is highly resistant to corrosion.



NEW, DIFFERENT, MORE EFFICIENT DESIGN FOR BETTER, LONGER, LOW COST SERVICE!

HERE IS THE UNIQUE Rheem design that saves you money and trouble! The inner tank, containing the hot water supply, is pure, rustproof, corrosion-resistant copper inside a super-strong Pressure-Proved steel tank. All connections are rustfree, corrosion-resistant red brass!

LOW OPERATING COST! A new, highly-efficient burner directly heats the domed tank bottom surface. An ingenious flue channels heat around the upper tank surface! You get faster heating at lower cost.

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Basic processing steps are re-enacted



PULVERIZING, first step, breaks up taconite so iron can be removed.



SEPARATING iron dust from the rock dust is done with big magnet.



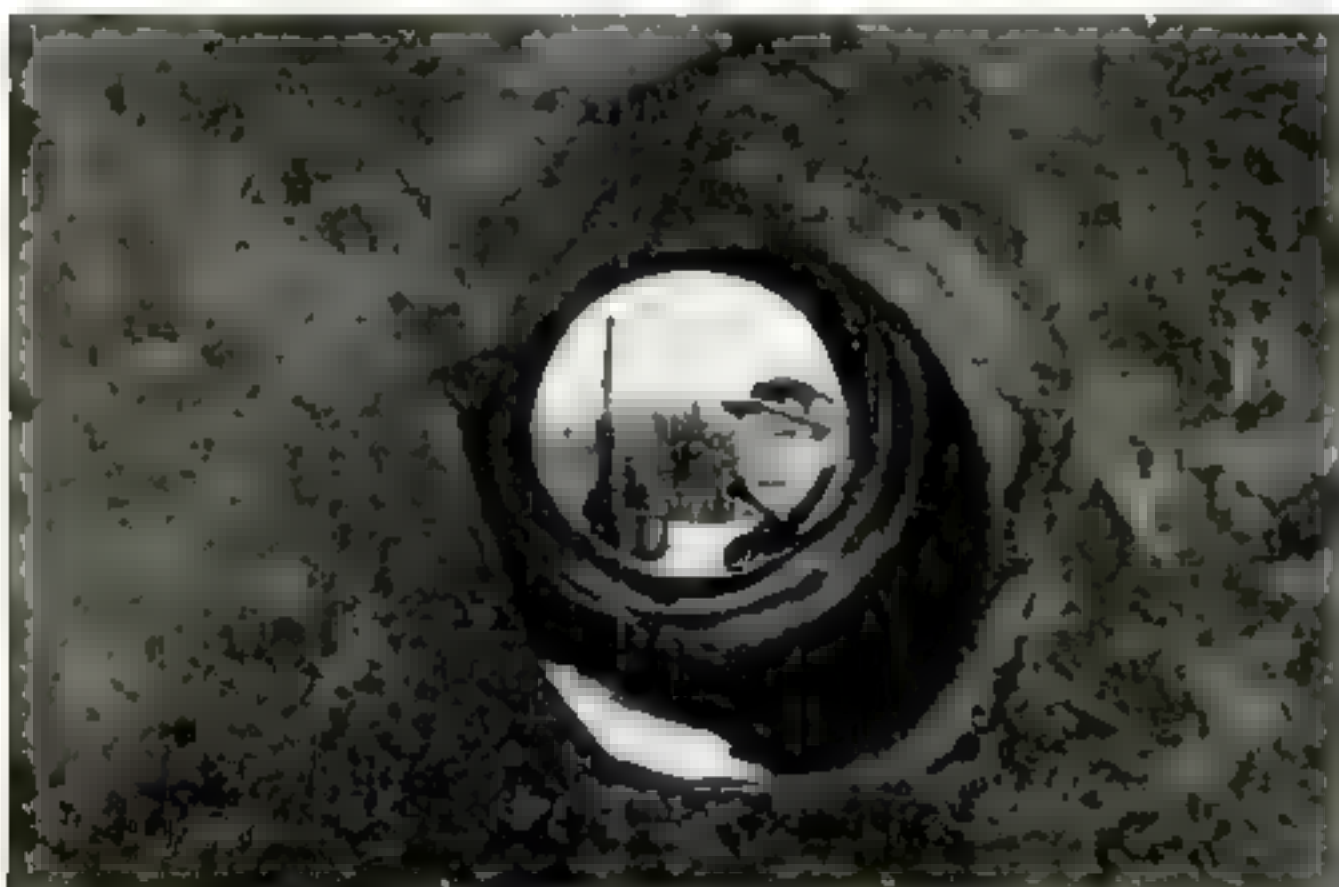
ROLLING iron dust into ball gives it body needed in the blast furnace.



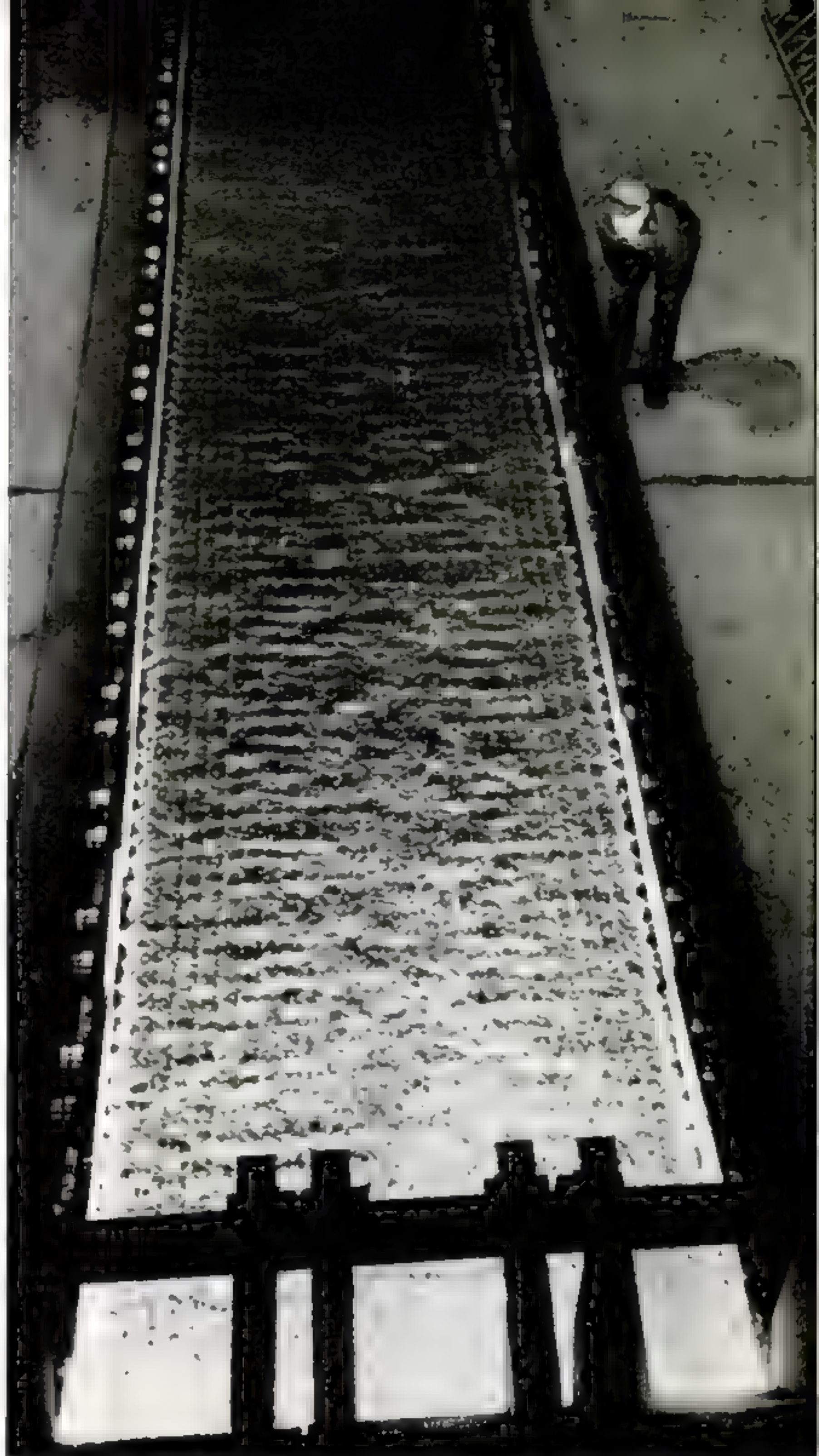
HEATING hardens the pellet so it will hold together during shipment.

METHODS MUST STILL IMPROVE

The iron in taconite, unlike the thick vein deposits which occur in high-grade ores, is widely dispersed in fine particles difficult to extract. The sample steps above, done with simple tools, demonstrate the method used in the big ore-processing plants. Because of this, U.S. industry did not begin developing taconite as a major iron source until World War II when steel consumption jumped toward 100 million tons a year and began gobbling up high-grade iron reserves at an alarming rate. But today, as a result of a half billion dollar program, steel and mining companies have set up research and processing plants in the Mesabi area which are expected to produce 12.5 million tons of iron a year by 1958. Iron refined from low-grade taconite still costs much more than iron from fast-dwindling high-grade domestic ore, but it will soon be able to compete favorably with that shipped from new foreign fields in Venezuela, Labrador and Liberia, which might be cut off in the event of war. Some experts think that taconite may one day yield half the pig iron needed for the nation's steel mills.



JET-PIERCED HOLE was burnt through taconite by machine on page 63. Jet goes at rate of 18 feet per hour, nine times faster than best previous drills.



NEW PROCESS (above) called "sintering," which gets iron dust ready for blast furnace by burning with coal on conveyor belt, is used by a U.S. Steel subsidiary.

NEW TOWN (below) was built by the Reserve Mining Company to house 250 workers at new taconite mine and plant (in clearing, top center) at Rabbitt, Minn.





Bed against wall easily made! "Our bedroom is small, so the bed must be placed against the wall—and what a time I had making it every day! Now, for the first time, I've tried Pacific Contour sheets.

These mattress-fitting corners hold the sheets so snug, I never have to pull out the bed to retuck them. It's Pacific Contours for me from now on."
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"How I came to buy my first

**Today thousands of homemakers put
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Now is the time to bring *your* beds up to date . . . with these mattress-fitting, time-saving sheets millions love, Pacific Contours!

More sleeping comfort . . . trimmer, neater beds . . . 3-times faster bedmaking—all are *yours* with this famous Pacific pair!

Pacific Contour Bottom Sheet . . .

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The wonder Top sheet that never pulls out, yet will not "hem you in"! Pacific's unique "Kick-fold" expands a full six inches for luxurious stretching, while two boxed corners anchor the sheet to the mattress foot.

See new pastel colors, new special sizes, of Pacific Contours listed in adjoining column. To meet the ever-growing demand, Pacific Contours now come in *every* standard size. **Pat. Pend.*

"Contour" is Pacific's registered trade-mark for its mattress-fitting sheets, the *original* fitted sheet now in use in millions of homes. Look for the Pacific label to be sure you get the genuine Contour sheet.

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Pacific Contour Sheets—both Tops and Bottoms!
 All Sanforized[®]

Combed Percals • Extra-Strength Muslin • Truth Muslin
 (Type 180) (Type 140) (Type 128)
 All the above in twin and double sizes

NEW SIZES—for Three-quarter beds,
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Short-cut bedmaking . . . more free time! "Just discovered your Pacific Contours and want to tell you what time savers they are! With two school-age children, I like to devote all the time I can to

our PTA. So every housekeeping short-cut is a blessing. With Pacific Contours, our bed-making is done in minutes, and beds are neater than ever before." *Mrs. Edwin H. Hastings, Warwick, R. I.*



Restless sleeper . . . no pulled-out sheets! "I first became interested in your Pacific Contour Top sheets because my husband's tossing always tore the bed apart. Pacific Contours solved my problem. With this ingenious 'Kick-fold' he can flop all he wishes, yet the sheets never pull out."

Mrs. C. R. Lyman, Mill Valley, Cal.

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Make a bee-line for the Pacific Contour table during this January Sale. These wonder sheets are priced lower than you'd believe . . . as low as ordinary flat sheets!



Every bed in Pacific Contours! "Before I had my baby 15 months ago, I bought your Pacific Contour Crib sheets. Since then I've been annoyed with flat sheets pulling out on my own bed. Now at last I have stay-tucked Pacific Contours for every bed in the house!"

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neater, more comfortable beds*

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HAPPY SHAVING! Thousands of Letric Shave users are already getting faster, finer shaves than they ever thought possible. Try it yourself and see why 9 out of 10 men who try Letric Shave continue to use it!

Here's how you can get top-notch performance from that Christmas gift shaver!

You'll never know how wonderful your new electric shaver can be . . . how close, quick and comfortable electric shaving can be . . . until you use this new *before-shave* beard conditioner. Cooling, refreshing Letric Shave goes on like a lotion, *then* you shave! Note how it improves performance of your razor no matter which brand it is. Feel how it cuts drag and discomfort . . . speeds up shaving!

That's why thousands of men will never go back to any other shaving method. They use Letric Shave regularly!

You get this amazing improvement in razor performance because Letric Shave prepares your face for shaving with a remarkable three-way "setting-up" action:

1. Sticky, razor-clogging perspiration is evaporated.
2. Your skin is lubricated to eliminate "shaver drag" and to allow faster, cooler, more comfortable shaving.

3. Your whiskers are softened so your shaver can cut them off quickly, cleanly and closely.

And Letric Shave is good for your shaver, too! It lubricates the shaver's cutting head for faster, easier action. Helps break in new razors, gives them longer life.

Try Letric Shave tomorrow. It's available at your nearest drugstore or toilet-goods counter—and it costs less than a penny a shave! Only 49 cents, no U. S. tax, for the 3-oz. bottle—enough for 80 shaves.

FREE TRIAL OFFER!

We want you to give this amazing beard conditioner a thorough trial because we're sure Letric Shave will keep you happy with your electric shaver for years to come.

That's why we'll send you a generous free sample—enough for a full month of shaving—absolutely free.

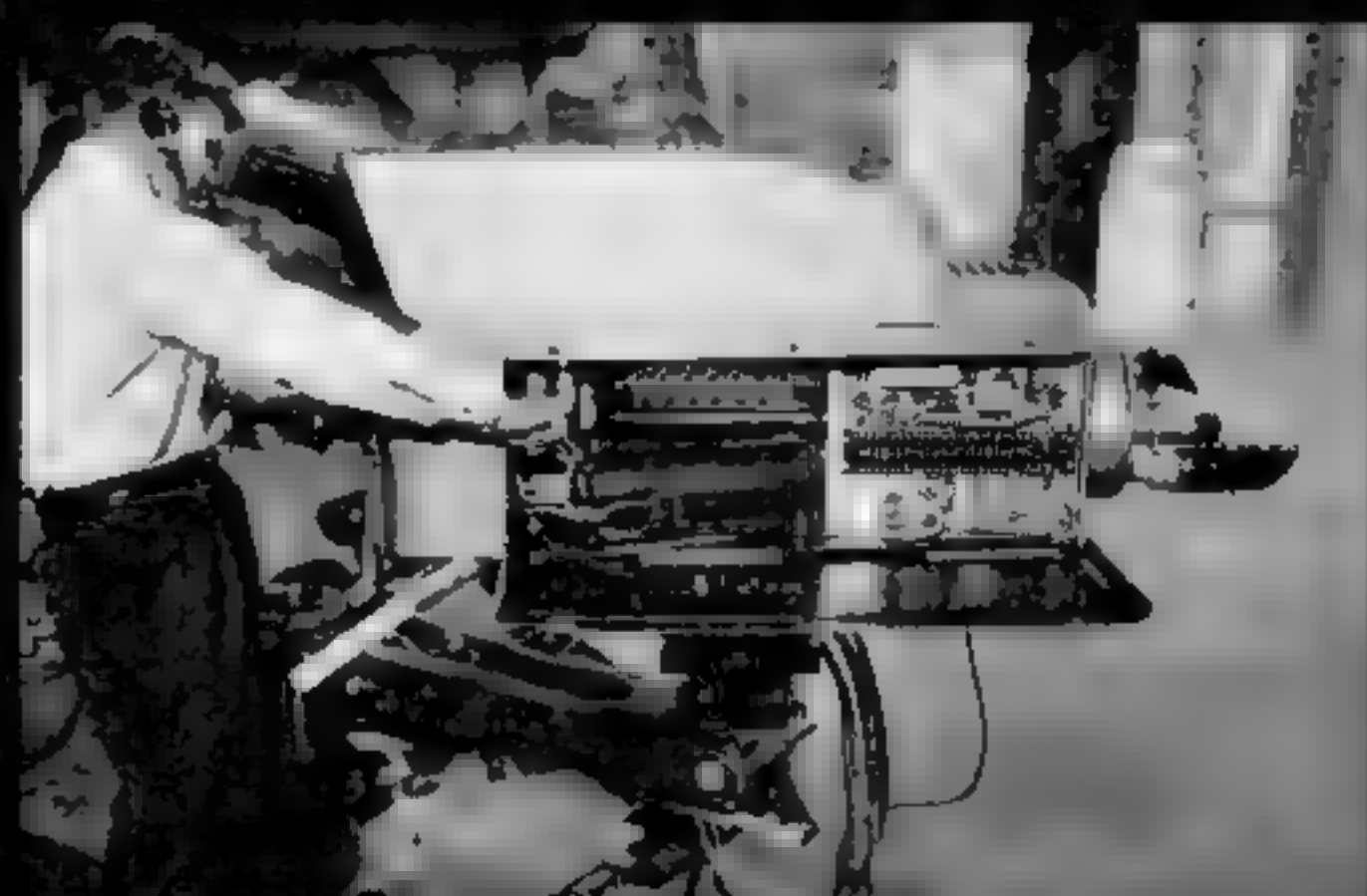
Send your name and address to The J. B. Williams Company Dept. L-1, Glastonbury, Conn. (offer good only in Continental U.S.A.)



"With Letric Shave, I shave much closer and faster—and get a cooler, more comfortable shave in the bargain," reports F. Ensminger, Jr., Newark, N. J.



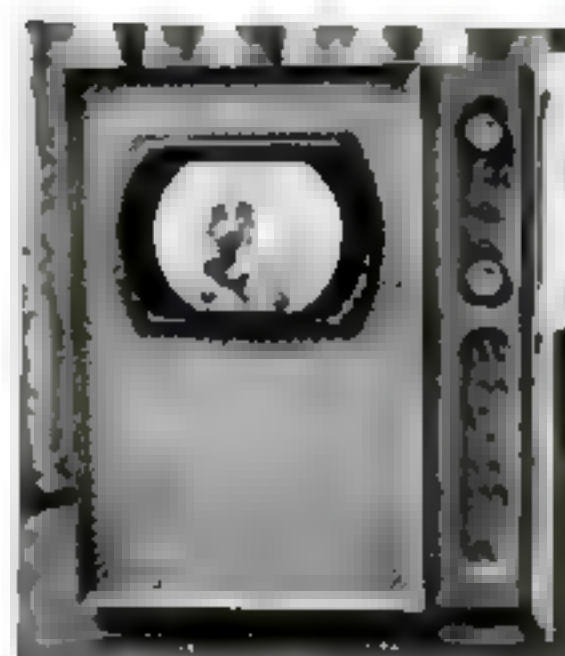
"Gave me wonderful results," says L. W. Meyers, Philadelphia, Pa. "With the first application of Letric Shave, I got a faster, smoother shave and my face felt refreshed."



RCA COLOR CAMERA WITH INNARDS BARED GOES INTO ACTION

UPHEAVAL, MARKETS TO COME FOR A STILL-INFANT INDUSTRY

COLOR TELEVISION



CBS SET WILL COST ABOUT \$900

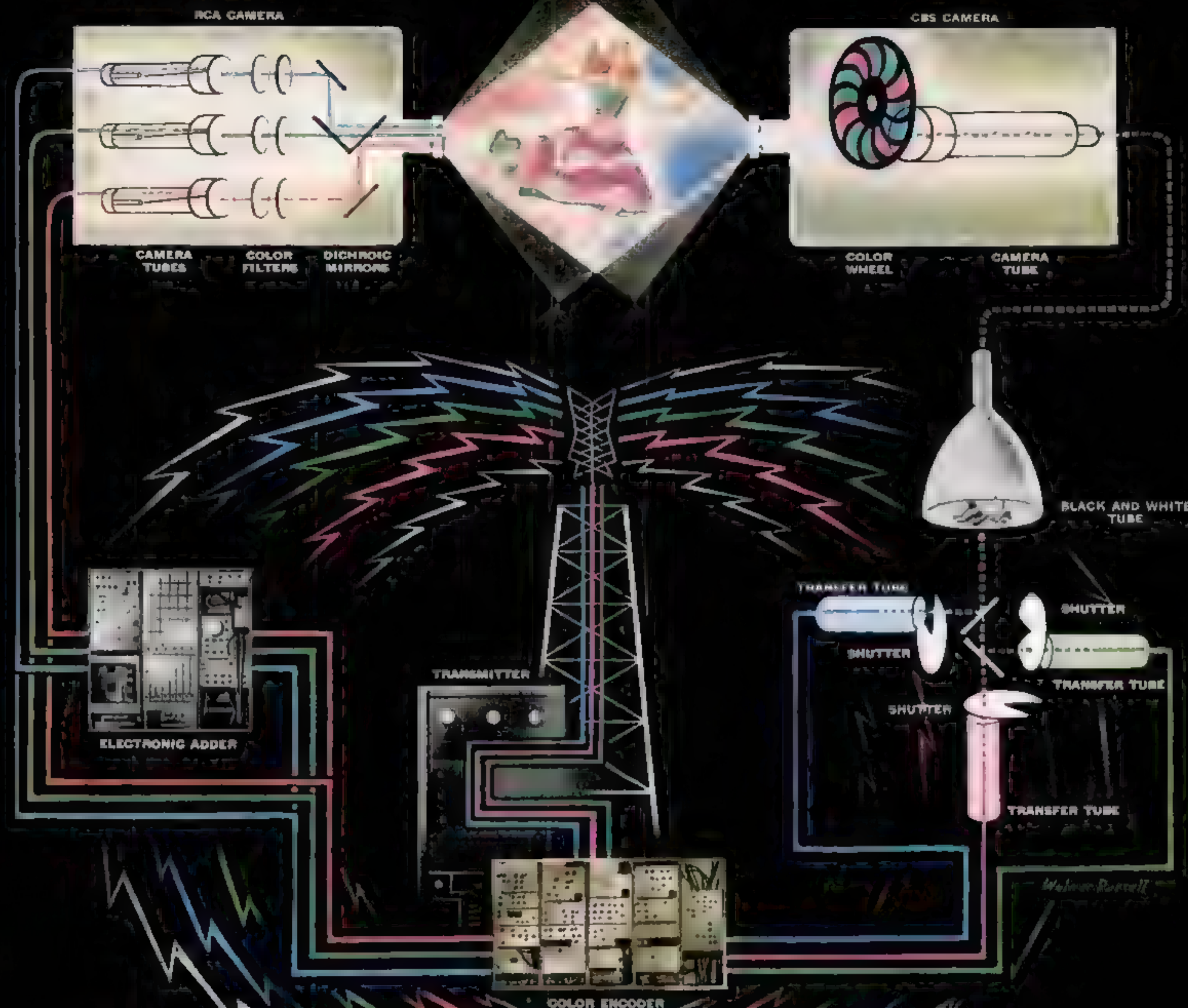
The last part of 1953 saw color television become a reality—at least to the extent that commercial shows were put on in color with some regularity, presaging a generally gaudy TV look for 1954. The FCC on Dec. 17 approved "compatible" color telecasting which enables viewers to see color shows in black and white on regular sets. Essentially the system is that illustrated on the opposite page in the Ra-

dio Corporation of America and the Columbia Broadcasting System variations. These differ mainly in first transmission steps; any set can receive images sent by both methods.

With color, the still-infant TV industry undergoes a sudden revolution which will greatly increase its markets and its scope. The cause color will bring confusion, too-quick obsolescence of black and white sets and financial hardships, sections of the TV industry have been reluctant revolutionaries. The introduction of color, nevertheless, is another example of the way U.S. industry finds—or is thrust into—new, profitable fields even before old ones are played out.



DESIGNER NORMAN FYLER WITH 16-INCH CBS COLOR TUBES



THE RCA WAY

RCA's camera (top, left) uses dichroic mirrors to separate the color image into its red, blue and green components. After filters have corrected the colors, three camera tubes pick up the different components and send them simultaneously to the transmission mechanism. On the way, however, some of the electronic impulses are diverted through an electronic adder where the black and white elements, which all three tubes have picked up, are brightened. The components then pass through a color encoder, which prepares the color impulses for standard transmission, and then through a transmitter which sends them to the viewer's set (right).

THE CBS WAY

CBS's method as demonstrated this fall begins with a color wheel (top, right) which separates the image into alternating red, blue and green impulses. These impulses, picked up and sent out by a single camera tube, go to an ordinary black and white tube. A system of mirrors reflects this black and white image into three transfer tubes, each of which has a shutter synchronized with the camera's color wheel, so that the red tube receives only the light taken in when the color wheel lets in red light, the blue tube receives only the blue impulse and so on. From here on through encoder and transmitter the CBS method is identical to RCA's.

HOME TV RECEIVER

For today's taste, today's living Pepsi-Cola is the light refreshment



This is a beautiful time to live in. The middle-aged are young. The old, middle-aged. And the young are more than ever a pleasure to look at.

Almost everybody looks and feels more youthful, because almost everybody has learned it pays, in health as well as looks, to keep waistlines down and figures slender.

Heavy, over-rich food and drink are out of date. The modern taste is for lighter, less filling foods and beverages.

That is the change with which Pepsi-Cola has steadily kept pace. Today's Pepsi is light, dry (not too sweet), reduced in calories. It refreshes without filling.

Enjoy Pepsi-Cola whenever you want refreshment. You'll find it everywhere—in the familiar economy bottle that serves two people, or in the smaller, single-drink size.

It's the modern, the *light* refreshment, for today's taste, today's way of living.

Refresh without filling. Have a Pepsi.

Pepsi-Cola

refreshes
without filling





COVEY OF CORVETTES heads from General Motors' 1/2-way type proving ground track near Milford, Mich., where standard speed and endurance tests are

given. Cars are driven clockwise around this track so that faster drivers, who would be in the outer lane, can pass others on the left, as on ordinary roads.

A CAR OF THE FUTURE IN MASS PRODUCTION TODAY

CORVETTE SHOWS THE WAY FOR PLASTIC CARS

Until 1953, no major U.S. automobile maker gave much serious thought to mass-producing a plastic car or a European-type sports car. It remained for the country's largest auto-making name, ultra-conservative Chevrolet, to do both. Although others had produced experimental models, Chevrolet first unwrapped its plastic-body Corvette last winter, though it had not yet solved all the problems of bonding and joining the different parts. Now, with a new process which pumps out fibrous glass sections covered with a coat of polyester resin, Chevrolet is ready for mass production. This month it will begin making 2,000 Corvettes a month.

Only 33 inches high at the door, the Corvette comes with a souped-up

160-hp version of Chevrolet's regular 11-hp engine. It will go over 100 mph and weighs only 2,350 lbs., compared with a standard Chevrolet convertible's 3,650 lbs. It sells for \$3,490 F.O.B. Flint, Mich. The body comes only in white with red upholstery, since white is the plastic's normal color and a demand for other colors has not yet materialized. But colored bodies should come soon—and so should new plastic cars from other makers, for plastics are cheaper than steel, more adaptable to design changes and far simpler to mold. Owners will like its lightness and ease of repair: if the tough plastic is punctured in an accident, it can usually be patched like new with a blowtorch for a couple of dollars.



SLITHERING CORVETTE is "weaving" in a sharp turn on a dirt road near Los Angeles. Although the Corvette's flexible springs and wheels let it wobble

make it handle far more like normal American cars than European sports cars, owners love its fast pickup. "You really dig out in a hurry," says one driver.

Chatham Blankets America

in a great *January Wool Sale!*

Save money! Buy these 100% wool blankets now.



California
Avocado

Nassen
Pink

Sun Valley
Yellow

Adirondack
Green

Riviera
Red

Pinchurst
White

Bermuda
Blue

100% WOOL 72" x 90"
FOR SINGLE OR DOUBLE BEDS

"PLAINFIELD"
Slightly higher
in the West
A REGULAR \$15.95 VALUE

\$12⁹⁵

100% WOOL 80" x 90"
EXTRA WIDE FOR DOUBLE BEDS

"HOPEDALE"
Slightly higher
in the West
A REGULAR \$17.95 VALUE

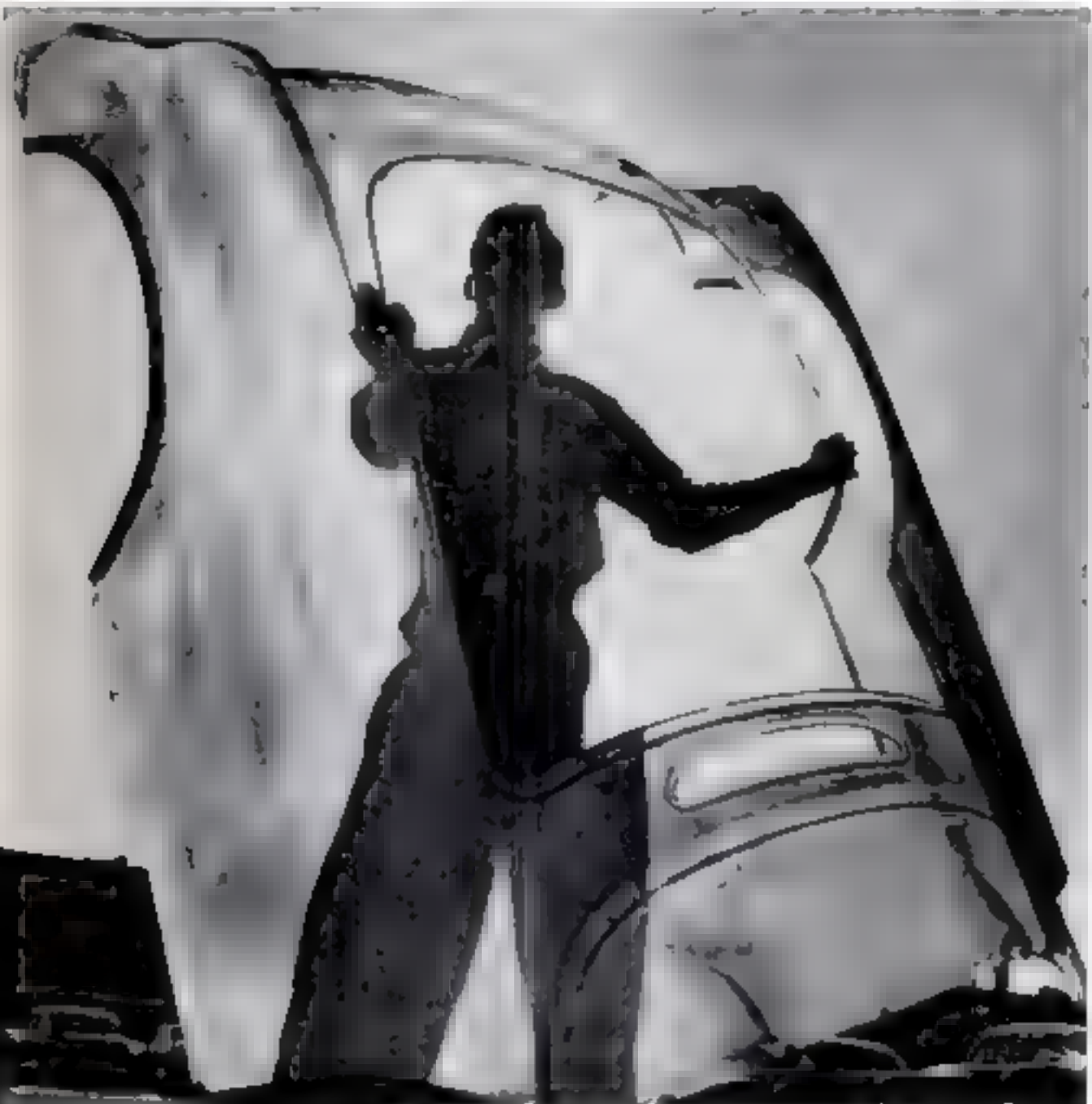
\$14⁹⁵



Lovely gift box
with floral motif.

This is your once-a-year chance to stock up on famous Chatham 100% wool blankets at important savings. Big, warm, winter-weight blankets bound in matching, extra-wide acetate satin, and gift-boxed, at your favorite store, *now*, in single or double bed sizes.

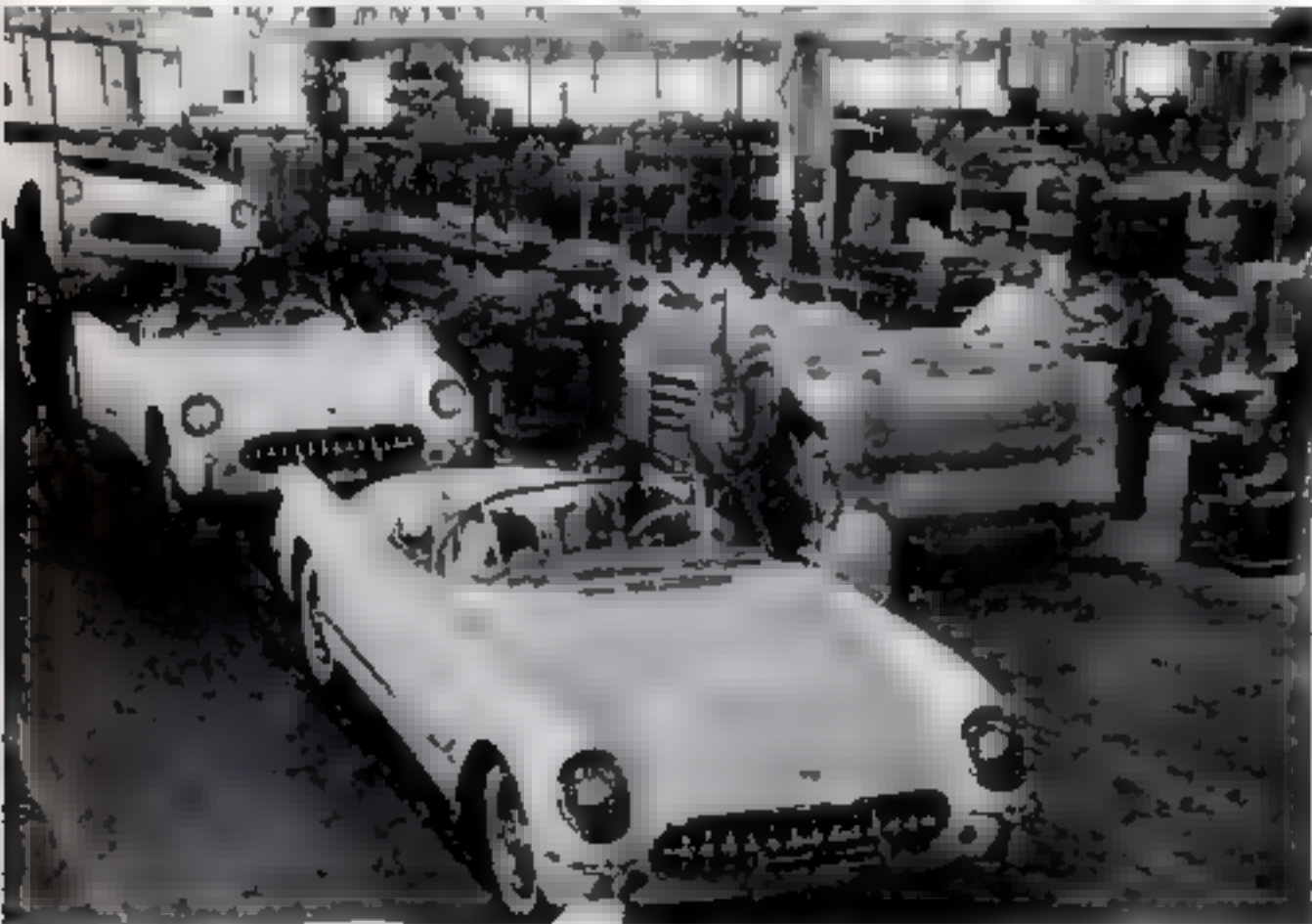
EVERYTHING PLASTIC BUT A LID



HOOD AND FENDERS section is held by workman at Corvette plant in Flint, Mich., where plastic parts are assembled. This one weighs 35 pounds.



54 PLASTIC PARTS which go into car are spread out. Workman holds gas tank lid, only metal part of body, metal because of spring which holds it shut.



OFF ASSEMBLY LINE come new Corvettes moving past stacked plastic underbody parts. Parts are bonded together with a plastic bonding material.

NOW IN 2 FLAVORS!
The Only Cough Drop
Really Medicated...

...medicated with throat-soothing ingredients of Vicks Vaporub. That's why Vicks Cough Drops bring you such wonderful relief!

Tomatoes 'n peppers pickles 'n spice, Simmered together 'n blended just nice. Soon as you taste it You'll love it because it's the real home-made kind!

Bennett's Chili Sauce

Mmm! mouth-watering flavor-magic on meats, poultry, sea food ... and in cookery too!

Betcha!

say Bennett's is as good as any "home-made" chili sauce you've tasted. If not—send us the neck-label and we'll refund retail price plus your postage.

Guaranteed by Good Housekeeping

Winter Fun!

GREYHOUND reaches all popular snow resorts ... offers low cost Charter Service for groups!

Relax—and save—as you go Greyhound to your favorite winter playground! For group snow parties Charter a Greyhound bus. You travel direct, you return when you wish. It costs little per person—it's great fun!

FREE! CHARTER BUS BOOKLET
Map to Greyhound Charter Service, 71 W. Lake St., Chicago 1, Illinois for full details on low-cost charter trips.

Name _____
Address _____
City & State _____

GREYHOUND

SOME UNQUALIFIED PREDICTIONS FROM A LOOK AHEAD TO THE 200TH

by GEORGE R. HARRISON

IN only 22 more years, less than the span of one generation, the U.S. A. will be celebrating its 200th birthday as a nation. What will it be like? The answer is that the material conditions of American life will have undergone some drastic changes. By 1976, for example, the cities and their surrounding suburbs should just be recovering from a great flow of population in two directions: out from the centers and in from the country. The job of clearing away the rotting slums will still be proceeding. The new office buildings going up will be smaller than the present large skyscrapers and better designed to eliminate gloomy city canyons. More steel, aluminum, glass and new alloys will be used as building materials. Bricklaying will diminish as handling costs gradually price it out of competition.

The population spread-out, which now appears sensible as a defense measure, will be intensified as better travel and communication facilities make it feasible. Shopping and small industrial centers will move increasingly to the suburbs. These, sprawling in a circle 20 miles or more out from the center of the city, will be connected by expressways which will run to huge parking lots in the city's outskirts. The last few miles from parking lot to office will be covered by greatly improved public service transportation. The two-car family will be as common as the two-radio family is now.

Homes will generally be assembled from prefabricated parts of lumber, plastic, fiber and metal. Architects will use more and more glass and design more and more picture windows covering the entire side of a room. On the site the houses will be put up quickly by expert workmen who will be paid more than \$1 an hour. In the north, houses will be heated by oil or gas, but more houses will be heated by electricity as it becomes cheaper to do so. In latitudes south of New York and St. Louis many homes will be built or adapted for solar heating. If auxiliary heat is necessary, it will come from the same electric air-conditioning unit that cools the house in the summer.

Some of the greatest changes in the next 22 years will come in transportation. With twice as much freight to be carried in 1976 as at present and at least half again as many passengers, all of our present modes of transport will be flourishing. Jet planes not much larger than our present big bombers will be carrying urgent express over long distances, but ships and trains will still be handling heavy and bulky freight. These carriers will have many improvements over the present ones, the most noticeable being in increased speed and safety. Bodies will become lighter and pay loads heavier as new alloys become available. There will be a much greater diversity of types of airplanes than there is today. Planes driven with nuclear energy will have been developed but they will probably not yet be in general use.

London and Los Angeles will be within three or four hours of New

York by jet planes departing every hour on the hour. Flying far above the weather at nearly 1,000 mph, transcontinental planes will proceed smoothly and safely to their single destination. There will be many more nonstop flights because of the increased numbers of both travelers and planes. These big planes will operate from long airstrips far outside the city but reachable by helicopter in minutes. On shorter hops between cities closer to each other, small airports nearer town will make intercity travel so frequent that, as in subway travel today, timetables will no longer be necessary.

At the present time helicopter taxi service to airports has not spread rapidly because of the small pay load and the noise and danger which make them undesirable around cities. But the success of helicopters in thousands of rescue missions of wounded soldiers during the Korean war has led to the design of improved larger models which carry 20 or more persons. Although the noise of flying jets may well be with us to stay, that of helicopters can be muffled. A two-engine model which can fly on either engine should solve the problem of getting to the airport quickly and safely.

While it is possible to predict fewer streetcars, lighter trains and more automobiles and buses, the exact evolution of the motor car in the next 22 years presents uncertainties. Cars will be simpler to drive and probably more complicated to build. Discovery of a method of storing electrical energy in a battery one twentieth as heavy as the present lead storage battery, and with the same 90% efficiency of recovery, could make the simpler electric automobile competitive with the gasoline-driven cars of today. Less probable are cars run on nuclear energy—not because an engine driven by a "pea-sized plutonium reactor" is basically inconceivable, but because of the heavy shielding required to block off dangerous radiations.

More food from the sea

HOW well will we eat in 1976? Today each of us requires about four pounds of food products per day. Many of us are currently consuming more than that and some 20 million Americans are shortening their lives by overeating. By 1976 we will have about 40 million more mouths to feed at home alone, to say nothing of commitments abroad.

This puts a considerable burden on the industry of farming. Today each worker on a U.S. farm feeds 16 people; by 1976 he will have to feed 20 or more. To do this by present methods would require about 120 million more acres of arable land, but even with the best irrigation, drainage and clearing we cannot get more than 40 million. That we will be able to solve the problem by improved machines and techniques is indicated by the steady rate of improvement during this



DRAWING SHOWS HOW LIFE MAY BE BY 1976: FROM GLASS-ED-IN HOMES (LEFT) WE WILL DRIVE ON SUPERHIGHWAYS TO PARKING LOTS, TAKE SUBWAY TO CITY.

A HIGHLY QUALIFIED OBSERVER

BIRTHDAY OF THE U.S.

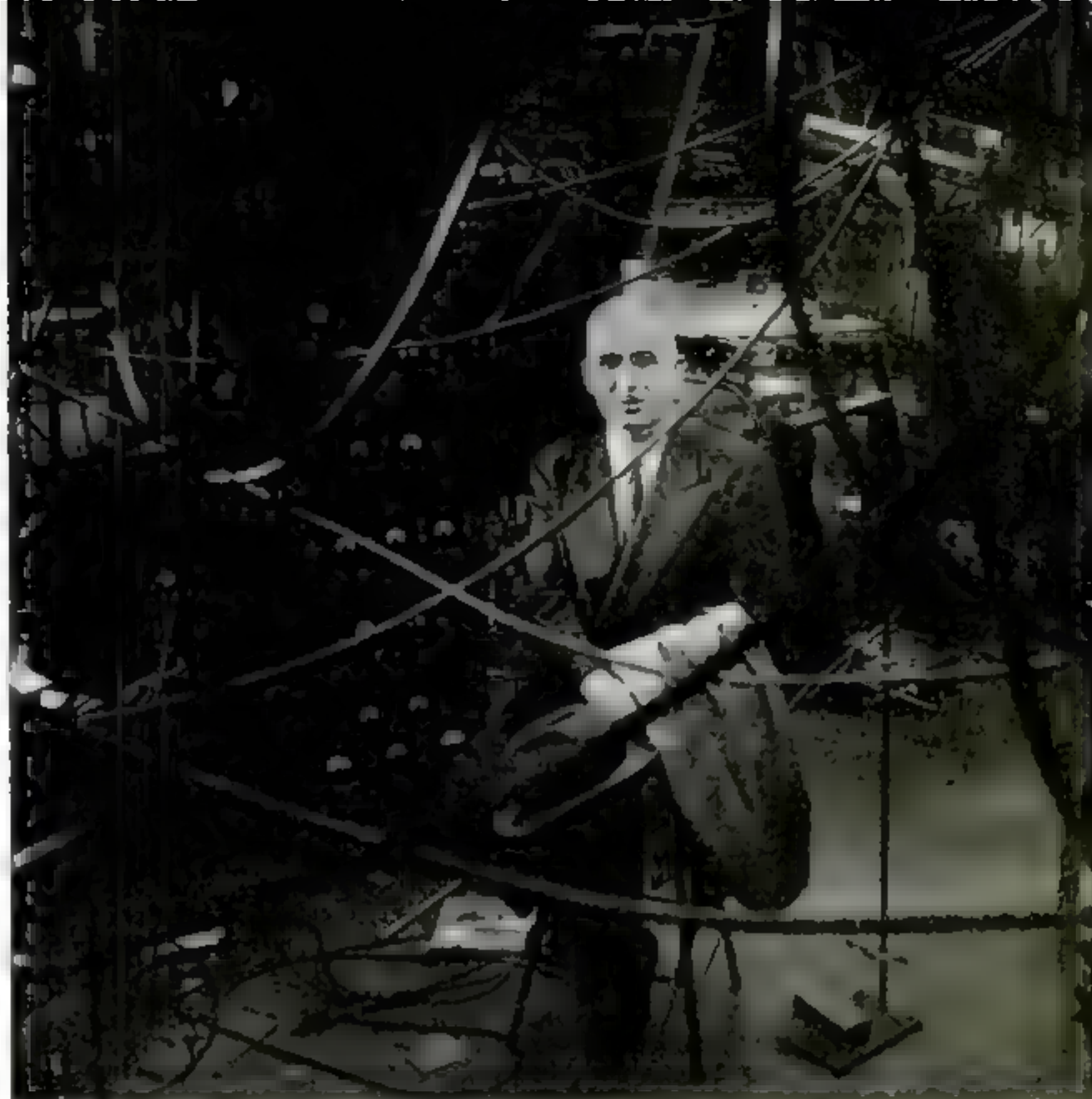
Dean of the School of Science, Massachusetts Institute of Technology

century: since 1920 our crop yields have increased by a third; by 1976 they should be up 50%.

Not more than two thirds of our daily caloric food intake should be carbohydrates (starch and sugar), which we convert to energy through our muscles. But electric and gasoline motors now provide a substitute for much human energy, and as a result our per capita starch consumption has been cut in half since 1900. It will fall still further by 1976. Nevertheless we will need an ever increasing supply of starch as our population grows. More and more of this can, when necessary, come from the sea. Each year some 360 billion tons of starches are produced in the ocean by single-celled algae plants and are largely wasted; this constitutes 200 times the nourishment needed by the present population of the entire world. Many of the algae are eaten by tiny animals, and their stored energy is passed through larger animals so that after five or six such transformations a pound of codfish on our dinner table represents the energy residue of 50 tons of plants. If we could gather algae effectively and learn to enjoy them as food, we would be eating higher off this energy pyramid.

If we are not careful we may be in for a serious protein shortage by 1976. The present mild shortage, resulting in high meat prices, is caused by our greater prosperity which enables more people to buy meat. Protein farming is less efficient than starch farming, for when animals eat feed, less than one seventh of the solar energy stored by the plants reappears in the animal products. This problem can be partly solved, of course, by such technological improvements as selective breeding and better soil fertilization and conditioning. But algae can swell the world's protein supply. Many types which grow in fresh water contain about 50% protein. Experiments have recently been carried out in which *Chlorella*, a single-celled alga, was grown in long plastic bags about four feet wide. After producing 100 pounds of dried algae the researchers estimated that for an investment of \$2 million in equipment, some 1,750 tons of food could be produced on 100 acres annually at a cost of about 25¢ per pound. This is still higher than the cost of producing many similarly nourishing and tastier products in the U.S., so algae farming will probably not be widespread until it can be done more cheaply, perhaps in open ponds. In Japan 30 tons of algae have been raised per acre per year. But their so-called "delicate grassy flavor" is not attractive, and much scientific work must be done before they can be converted economically into real or synthetic steaks.

Since natural protein foods spoil more easily than starches, the great canning, freezing and processing boom is due to grow even more. Food technologists are rapidly discovering better ways to sterilize, process and package food without loss of flavor. Nuclear radiations



WITH MACHINE OF THE FUTURE, Dean Harrison stands amidst intertwined wires of the synchrotron, a device for producing nuclear particles at M.I.T.

from cobalt-60 and similar radioactive materials will be used in our 1976 factories to sterilize food without the flavor change that heating often gives it. Quick freezing and storage in freezer units will be even more common than now. Packaging foods will be made more practical as microcrystalline waxes are developed further to seal paper packages from air and moisture, and as more and better metal foils become available.

Other great additions to our social wealth by 1976 will come from materials not known at present. The 90-odd kinds of elementary atoms existing in nature combine to form several hundred thousand kinds of molecular substances, of which chemists have already identified more than 100,000. But the chemists have themselves regrouped atoms to produce nearly twice as many kinds not found in nature and thus have given us such new materials as Freon and nylon. Synthesis or isolation of a new molecule can be a wonderful thing for mankind, affecting immeasurably our health, comfort, safety and general welfare. The pneumonia death rate was cut in half to a considerable extent because the price of penicillin was brought down from \$20 to 6¢ per 100,000 units.

Chemists will have learned by 1976 to synthesize more cheaply many valuable molecules now found only in natural products. At present 99% of the products of the dye industry are synthetic; so are

CONTINUED ON NEXT PAGE



MEANWHILE, FROM BIG AIRPORTS REACHED FROM CITY BY HELICOPTERS, WE WILL TAKE OFF BY JET TRANSPORT PLANE FOR 3,000-MILE TRIPS IN THREE HOURS

95% of the plastics, 75% of the drugs, 65% of the rubber products, 50% of the paints and 20% of the textiles. These percentages will all increase as the chemicals industry, already one of the fastest growing, becomes even more of a giant. Instead of the one natural rubber with which we were once content, or the present 30 varieties, there will be hundreds of special types, one that is best for tire treads, another for inner tubes, another for raincoats. This is also true of textiles, where such materials as Orlon, Dacron, Teflon, Acrilan and Dynel will be supplemented by dozens of equally valuable synthetic combinations of molecules.

Titanium, aluminum and magnesium will affect our economy more and more. Titanium, because of its lightness, strength and resistance to corrosion, will be used with, and sometimes instead of, iron. The production of aluminum in the U.S. has already passed that of all other metals except iron and steel. Each new metal or alloy which makes possible a lighter and stronger building, car or airplane starts a vast new development which affects many industries.

We can always get our atoms from the sea if necessary. A cubic mile of sea water contains 143 million tons of table salt, 5 million tons of magnesium, 300,000 tons of bromine (used in antiknock fuels) and many other useful materials. However, the utilization of atoms from the sea is only in its initial stage; it will remain so until vast amounts of nuclear energy become freely available.

Automatic factories

THE place where American inventive talents find their widest expression, the factory, is due for the most far-reaching changes of all. Operations analysis, the scientific evaluation of procedures which was developed so markedly during the last war, will greatly affect industry. The automatic factory, which has got off to a slow start, will be in full swing by 1976. Already there is a machine which sorts rice grains so fast that it can remove all the grains with black specks on them from a 100-pound bag of rice in a few minutes. Such novelties of today will become commonplace. Laborers replaced by such machines will be shifted to more important jobs; the more energy a workman can control, the more he can be paid.

A milling machine developed at M.I.T., which turns out machined parts of any desired shape under instructions from a master punched tape (*below, right*), illustrates a trend that will permeate all great industrial installations by 1976. General Electric recently announced a machine that records instructions on a magnetic tape; the tape can then direct the operations of hundreds of other machines.

Just as the printing press made available millions of copies of a page on which ideas and mental images are stored, machines will be made to produce as many duplicate engine parts as desired. And, in turn, calculating machines like ENIAC and WHIRLWIND, capable of making thousands of arithmetical operations in a second, can be made to tell these other machines what detailed instructions to give (but always there must be men to give the first orders).

Basic in assessing the effect of changes in any commodity on our wealth level is the labor involved in its production. We now can buy enough rubber with one hour's work, on the average, to make a tire thick enough to carry us 2,000 miles; in 1911 the figure was 20 miles.

Thus the level of wealth, measured only in terms of rubber for tires, has risen one hundredfold in 43 years. On the other hand, in terms of the laying of bricks our wealth level has fallen fourfold or more in the same period.

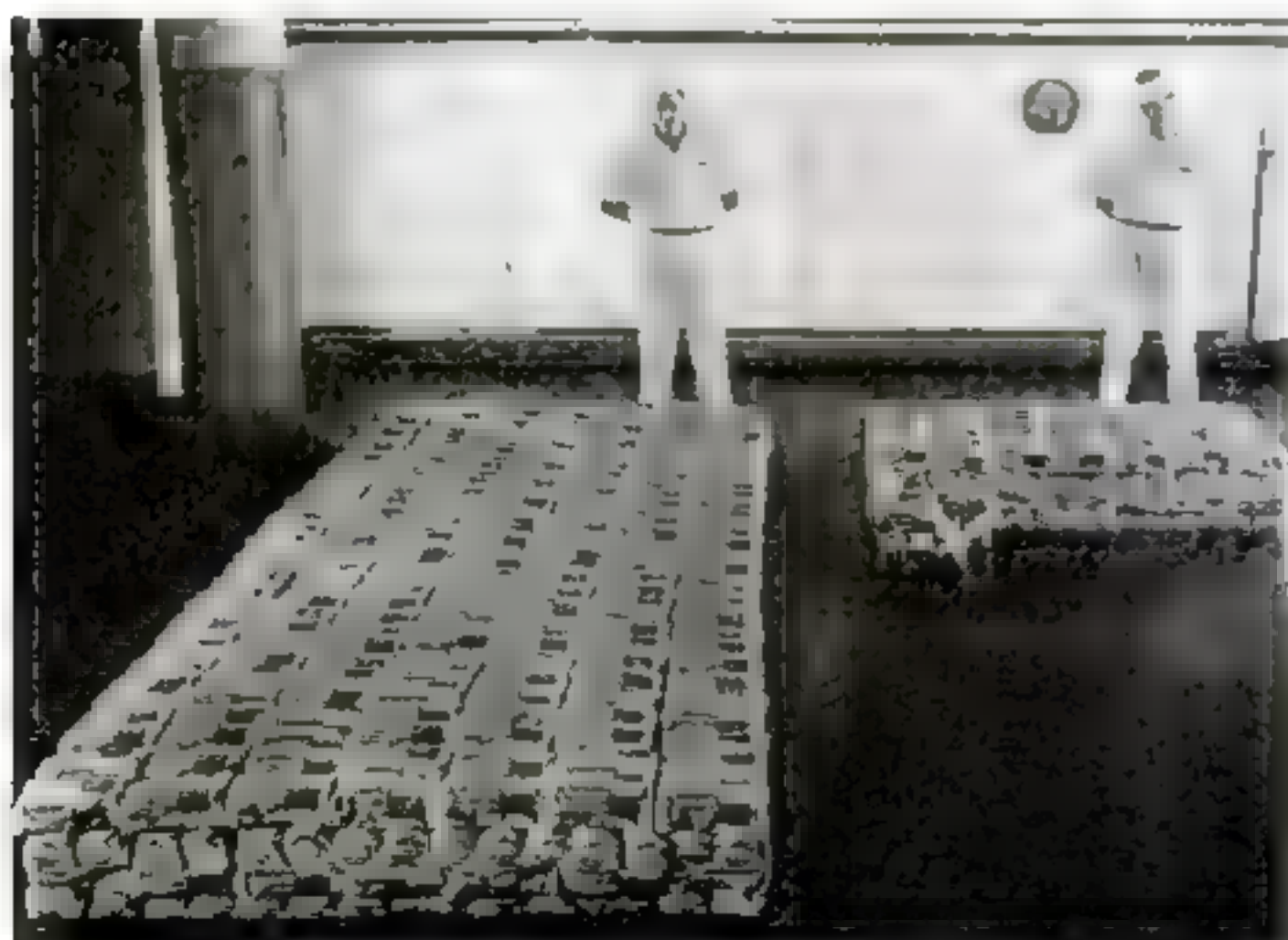
Fewer than half as many coal miners now work in the U.S. as in 1920 and still fewer will be needed in 1976. This is socially desirable, for technological employment (a far more widespread and important phenomenon than technological unemployment) will give the men more useful jobs in pleasanter surroundings. In 1900 there were 29 million jobs in the U.S.; in 1953 there were 66 million and women filled many of them. Machines can replace men in countless jobs which the machines can do better and which men prefer not to do. The scientific advances which bring in the new machines always open up new jobs. By 1976 there should be at least 96 million jobs, a still greater demand for women workers and added needs for new and better machines. But working hours, already fallen from the 70-hour week of 1850 through the 60-hour week of 1900 to the 40-hour week of 1953, will fall further, perhaps to about 30 by 1976.

Improved communications will have lessened our work by increasing our efficiency. The present 50 million American telephones may well have doubled in number by then, and it should be possible to reach any telephone in the country by dial from any other. While transistors will by no means have displaced all vacuum tubes, they should, in combination with electronic circuits printed on plastic, make possible very light and compact pocket telephones approaching the "wrist watch radio" of today's science fiction and comic strips. Television will be in full color and three dimensions, giving technical perfection which program material will have difficulty in matching.

So all in all the prospects are good for 1976. America's standard of living is four times as good today as it was in 1900. And if we extend the long-term trends of the present to 1976, we find that we can expect to be twice as well off then as we are now. Auspicious omens these are, but they depend to a great extent on one element: energy (*which is discussed on the following 14 pages*). For the trends that have been cited will hold only if our principal sources of energy—oil, gas, coal, water power, agricultural products (like wood) and nuclear energy—do not fall below our needs. Our material future looks good only if these supplies hold up.

But with sufficient sources of energy, this picture of American prosperity in 1976 is probably underoptimistic. Judged by past experience, the forecast is conservative. It does not consider rocket trips to the moon or similar scientific playthings. It assumes there will be no global atomic war fought with hydrogen bombs which might "wipe out civilization."

Our nation has been passing through the worst period of wars and strikes in its history, yet all these troubles have cost us less than 10% of our material wealth. There is at present no visible limit to the wealth level we can attain, provided we keep our balance on the path we are now traveling. Though all are interconnected, to a considerable degree our politics are determined by our economics, our economics by our industry, our industry by our technology and our technology by our science. So long as freedom of inquiry, of belief and of opportunity can be maintained, there is every chance that the U.S. will have a prosperous and very happy birthday on July 4, 1976.



MORE BREAD will be made in 1976, in automatic plants like the one American Stores Company already operates in Philadelphia. Here 912 loaves represent current production per man per day, 200 loaves represent former production.



MORE WIDGETS for industry will also be made in automatic factories. The tape shown above, fed into automatically controlled milling machine, cuts brass block (*left*) into desired shape for making part of an automatic transmission.

How I feel about **LIFE**



The Pulse of America

I have a story I always like to tell about LIFE.

In the fall of 1946, LIFE started a feature story on my work. The next summer, for a LIFE photographer, we collected examples of everything that my associates and I had designed at that time, and brought them all to an airport near Harrisburg, Pa.

The Pennsylvania Railroad actually delivered two locomotives, one of them an S-1, a 418-ton steam giant, all the way from St. Louis. From San Antonio, Texas, 1,840 miles away, the Coca-Cola Company sent a Loewy-styled bottlers' truck, and to insure its arrival in time, the driver drove all night.

As I remember, work continued on the story for many more months. Eleven photographers and a score of researchers were involved. After almost three years, the piece was published. But the Harrisburg picture was not included. It had simply not proved to be dramatic enough!

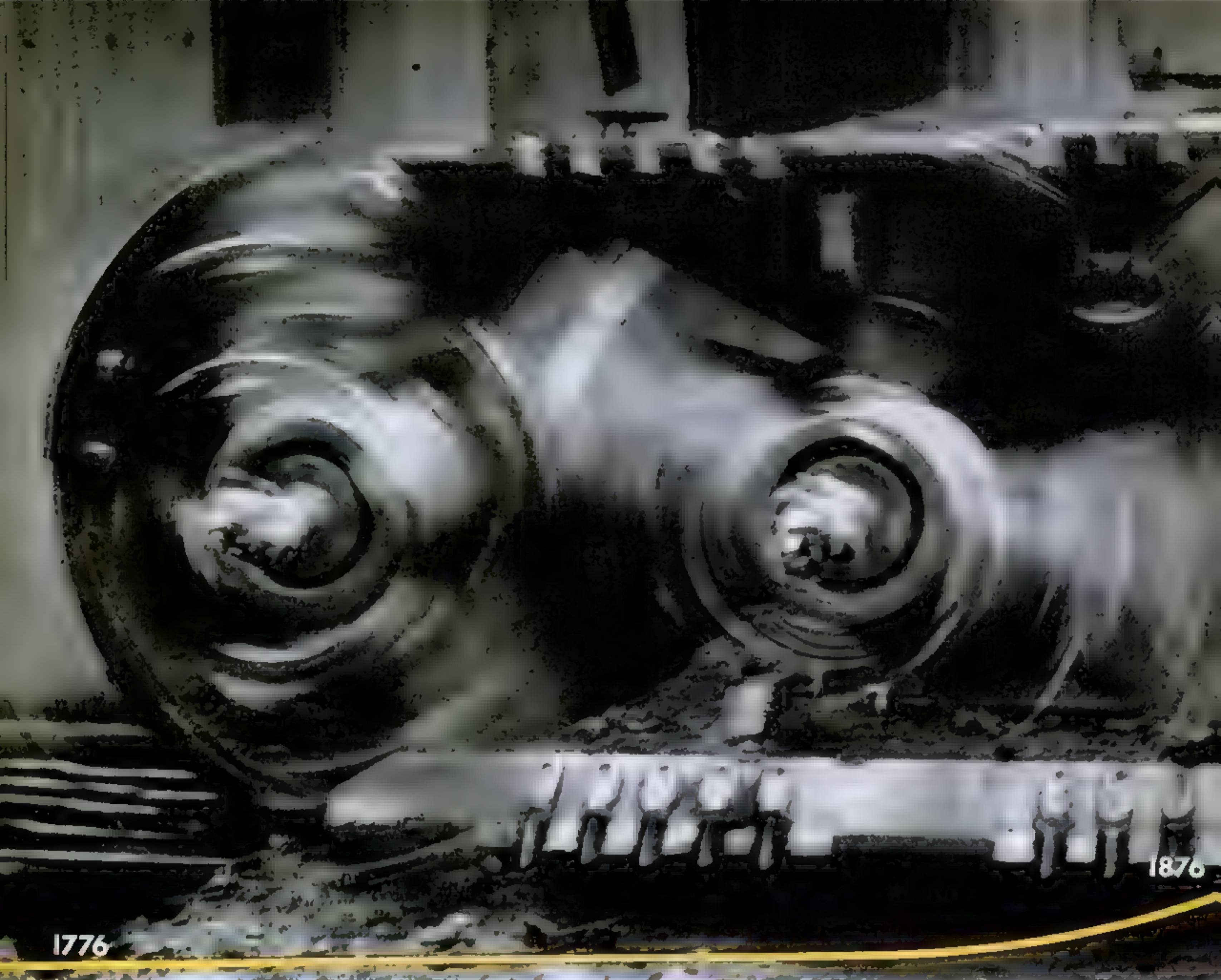
This story shows two things about LIFE that make the magazine unique. First, the extraordinary lengths to which its people will go to get a picture they want; and second, the ruthless editorial blue pencil—which insists that every picture used must do a job of clarifying or dramatizing that words alone cannot do.

Industrial designers must keep up with—and sometimes keep many years ahead of—changing styles and manners. For that reason I have four subscriptions to LIFE for my New York staff, and LIFE is the only general magazine we file.

The whole of every issue, advertising as well as editorial content, conveys to me as nothing else can the subtle transformations that are always taking place in the way America thinks and reacts.

When I read LIFE I feel as if I were taking the pulse of America.

By **RAYMOND LOEWY**, Industrial Designer

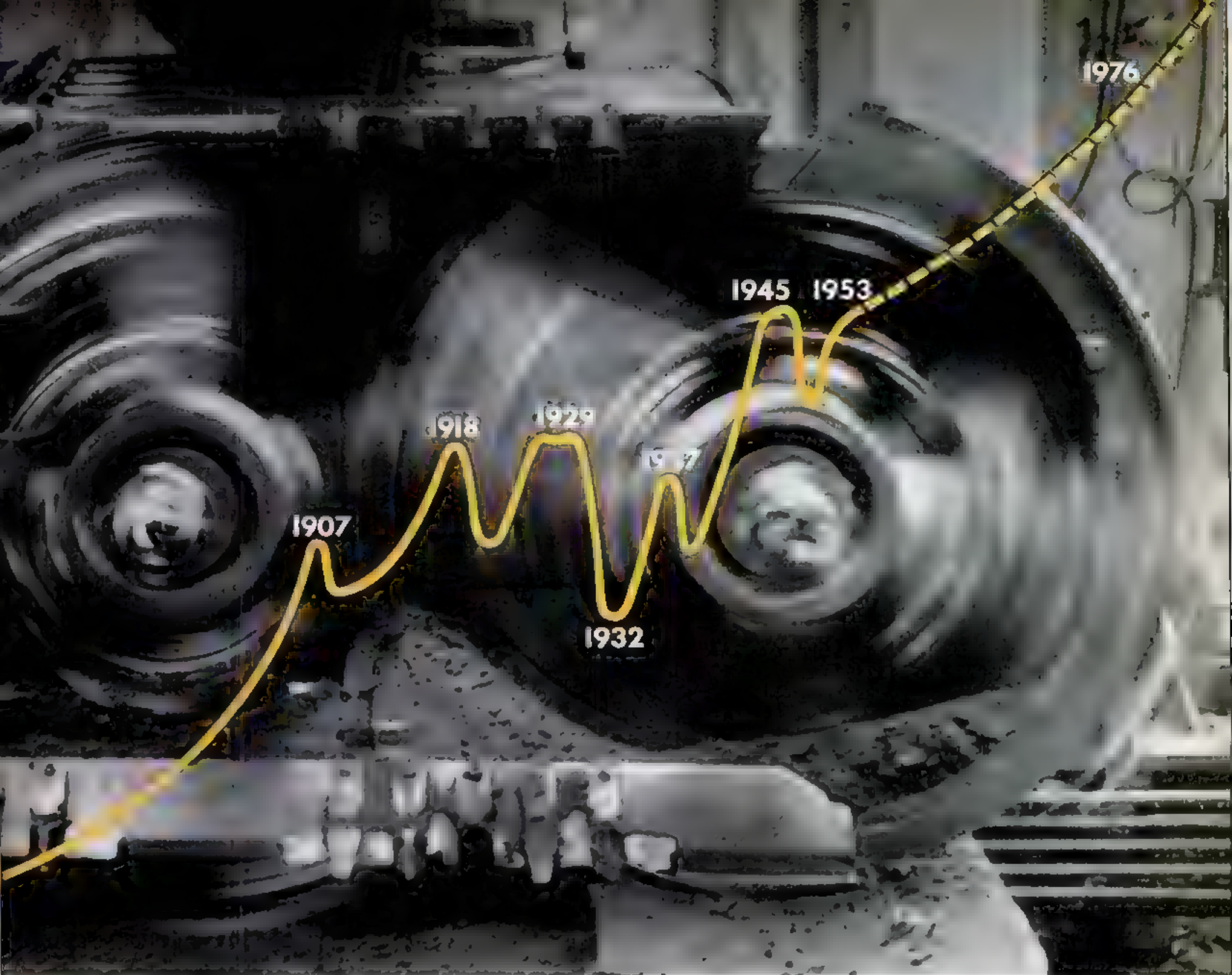


SINCE NATION'S BIRTH IN 1776, ANNUAL USE OF POWER PER PERSON (YELLOW LINE) HAS GROWN 2,000 TIMES, WITH ONLY TEMPORARY SETBACKS ALONG THE WAY DURING ECONOMIC



SOURCE OF ENERGY, as chart of solar radiation consumption shows, is the sun; 400 quadrillion kilowatt hours of solar energy penetrate the atmosphere and reach earth in a year. A tiny fraction of energy used by land vegetation is

ultimately recovered in coal. Some sun-supported sea life sinks into bottom ooze to become oil and gas. Rays also evaporate water from sea and foliage to make rain for water power. But more than 99.9% of sun's energy is lost to man.



READJUSTMENTS. BY 1976 POWER PRODUCTION WILL BE DOUBLE TODAY'S, WITH EXPECTED INCREASE IN POPULATION, ENERGY QUOTA PER PERSON WILL BE 330 MILLION B.T.U.s

ONE SURE BET FOR U.S. OF TOMORROW

TWICE AS MUCH POWER

New sources will satisfy immense appetite for energy

Last year the automobile engines, the factory furnaces, the household appliance motors and the miscellaneous contrivances belonging to 161 million Americans, who are only 7% of the world's population, gobbled up a gluttonous 45% of the world's supply of power. They consumed more energy in 12 months than the nation did in the first 75 years of its existence, demonstrating a genius that Americans have always had for putting ever larger quantities of nature's energy into harness, hitching it to an endless variety of power-driven inventions to turn out a standard of living for themselves that no other nation could approach.

At the time of the Revolution each citizen of the U.S. had at his disposal, in addition to the strength of his back, only about 126,000 British Thermal Units of energy for a whole year, enough to run a 10-hp engine for two days. He used most of this merely burning wood to keep warm.

In 1953 each American's quota of B.T.U.s supplied by coal, oil, gas and water was a staggering 250 million, enough to keep 30 solid gold Cadillacs roaring down the superhighway at 60 mph for half a working

week. But even this amount was quickly gobbled up by the power-hungry nation. Industrial installations like aluminum mills, blast furnaces and chemical retorts, bigger automobiles, new TV sets and other appliances and finally voracious jet-propelled missiles (see cover) ate up the energy as fast as it was turned out.

The average citizen used most of his energy quota to make himself more comfortable and mobile. About a fourth of the power supply was used to carry people and possessions. A fourth went to keep people warm, illuminate night life, energize appliances. A fifth was used to manufacture articles for his use. Much of the remaining 30% went to mine and pump more fuel and convert it from one form to another.

Some old and honored sources for energy had long since been discarded—less power came from all U.S. windmills last year than was used to turn electric fans. Americans in 1953 were turning to daring new ways to supply power (see next 12 pages), conscious that their national appetite for energy is growing so fast that it will double in another 25 years.



SENDING COAL BY WIRE TO CUT SHIPPING COSTS IS ACHIEVED AT BEVERLY, OHIO BY ELECTRIC GENERATING PLANT BUILT NEAR MINE TO TURN COAL INTO CURRENT. 4½-MILE

COAL: We will have to have it—and it is dropping

The energy used to build the U.S. has come more from coal than from all other sources combined. But after World War II coal was dethroned as king of fuels. This was because it had to be grubbed from the ground and men who did it demanded higher and higher wages; and transporting it came to cost more than twice as much as piping oil. In the past seven years more than 200 mines have closed down

and in 1953 coal, which 50 years ago supplied 88% of U.S. power, supplied only 33%.

Losing ground while power demands were soaring, the coal industry tried radical cures for its sickness. To cut labor bills, half the men in some mines were replaced by mechanical diggers (*above, right*) that chip out coal, cart it away with no human assistance except for machine operators. Even these shovelless

mine workers may be eliminated by electronically guided robots (*lower right*) that probe blindly into mines that no man ever enters.

To cut shipping costs, coal is converted into something else near the mine. Minesite generators permit moving coal as electricity. Underground fires turn seams of coal into incompletely burned gases which are then piped out. And powdered coal can be mixed with water to

THE WORLD'S BIGGEST COAL-FUELED GENERATING PLANT, BEING BUILT BY TVA, WILL OUTPRODUCE HOOVER DAM



NEAR THE TVA PLANT 58 ACRES OF COAL PILE UP.





CONVEYOR BELT TAKES FUEL FROM MINE TO PLANT

its outworn ways

make a coffee-like mixture that is piped like oil.

The economic spur urging coal men to try such tricks is the certain future for electricity, added to the fact that oil and gas will run out long before coal. By 1976 the U.S. will demand 60% more coal. Much of it will go to gigantic power plants like TVA's 1.4 million kilowatt monster (*below, left*) at Kingston, Tenn., which will gulp 614 tons every hour.

4.3 MILLION TONS WILL BE CONSUMED EVERY YEAR



THE MECHANICAL MINER chews its way into a rich coal seam. It is a welcome innovation both to workers, who no longer need touch coal or pickax,

and to owners, who need only half of former crew to run machines. Machines are revolutionizing coal industry in same way as harvester changed farming.

ROBOT MINER, CONTROLLED BY MEN WATCHING RADARLIKE SCREEN IN ITS CAB, DIGS ROW OF 700-FOOT BORINGS





OIL FROM ROCK is aim of miner preparing walls and roof of shale mine at Rifle, Colo., for Hasting. Shale knocked from mine walls by explosion is crushed, then heated to above 900°; a process that transforms 70 to 80% of it into crude oil.

OIL FROM SEA BOTTOM is carried to the shore by tank barge (foreground) from a drilling rig perched on a man-made island seven miles out in the Gulf of Mexico. In distance, to left of the rig, are storage tanks sitting on another platform.





IN KENTUCKY A WELDING TEAM SEALS A JOINT BETWEEN SECTIONS OF A NEW 30-INCH LOUISIANA-TO-WEST VIRGINIA NATURAL GAS PIPELINE

OIL and GAS: Biggest sources of power find added reserves in rock and under water

Last year the U.S. got more energy from oil than from any other source—and used 17% of the total national power consumption to propel cars and trucks.

But as the U.S. converted to oil as its major fuel, a disturbing question arose: how long can the oil last? Known U.S. reserves are only enough to last for about 11 years, even if the probable increase in use is ignored. But the rate at which new supplies of oil are still being discovered—last year 1½ barrels of new oil were found for each barrel pumped out of the ground—shows why there will be no oil crisis 11 years from now. No one knows how much oil will ultimately be produced. Pessimists think it may be running short in a couple of decades. Optimists say it will be a century or more before U.S. oil fields begin to go dry. Gas reserves may last about as long as oil.

Oil men who started 1953 with a \$31 billion industry and ended it with a \$34.5 billion one are not particularly worried. They are drilling through water to tap off-shore supplies, big enough to supply the U.S. for at least five years. They are experimenting with shale rock, which yields crude oil when heated and has five times the reserves of oil. They are pumping water into old wells to get pressure to pump more oil than they would otherwise get and are setting wells on fire to thin gummy oil to the point where it can be pumped out.

The gas industry poured money into big bore pipelines and pumped gas into old oil wells to store it during slack seasons instead of dumping it on the market. And when oil and gas supplies are gone, they can be made from coal, many times more plentiful than oil and gas combined.



NIAGARA'S NEW HARNESS, which Canada has started and U.S. is planning, would boost capacity from one million kilowatts to world record three million. Drawing shows double tunnels (far right) being bored by Canada to pipe water

from above falls to newly expanded Sir Adam Beck generators (left). U.S. triple tunnels (top) would siphon up to 21.6 million gallons of water per minute from river, take it under city to new plant at Lewiston, N.Y. (left), a drop of 315 feet.

FORTY-FIVE-FOOT TUNNEL BYPASSING THE HORSESHOE FALLS DWARFS A WORKMAN



WATER: Big tunnels and dams tap big potential

Although river waters, rushing to the sea, can be harnessed more efficiently and reliably than any other energy source, U.S. water power last year furnished only one eighth as much energy as coal. Virgin water-power sites have four times the potential of those now developed, but half lie in the far West which until recently had little demand for power.

Now 54 new hydro plants are being built, adding about 40% to the 1953 capacity. Some are at completed dams like Hoover, now installing its last two generator wheels. Others are at new dams like Chief Joseph, which may eventually rival the 19 kilowatt output of the world's greatest generating plant, Grand Coulee. Bolder than any of these will be the redevelopment of Niagara's waterfall, where new tunnels will ultimately drain off enough water to grind out three million kilowatts, triple today's output, without affecting the thundering spectacle of the falls.

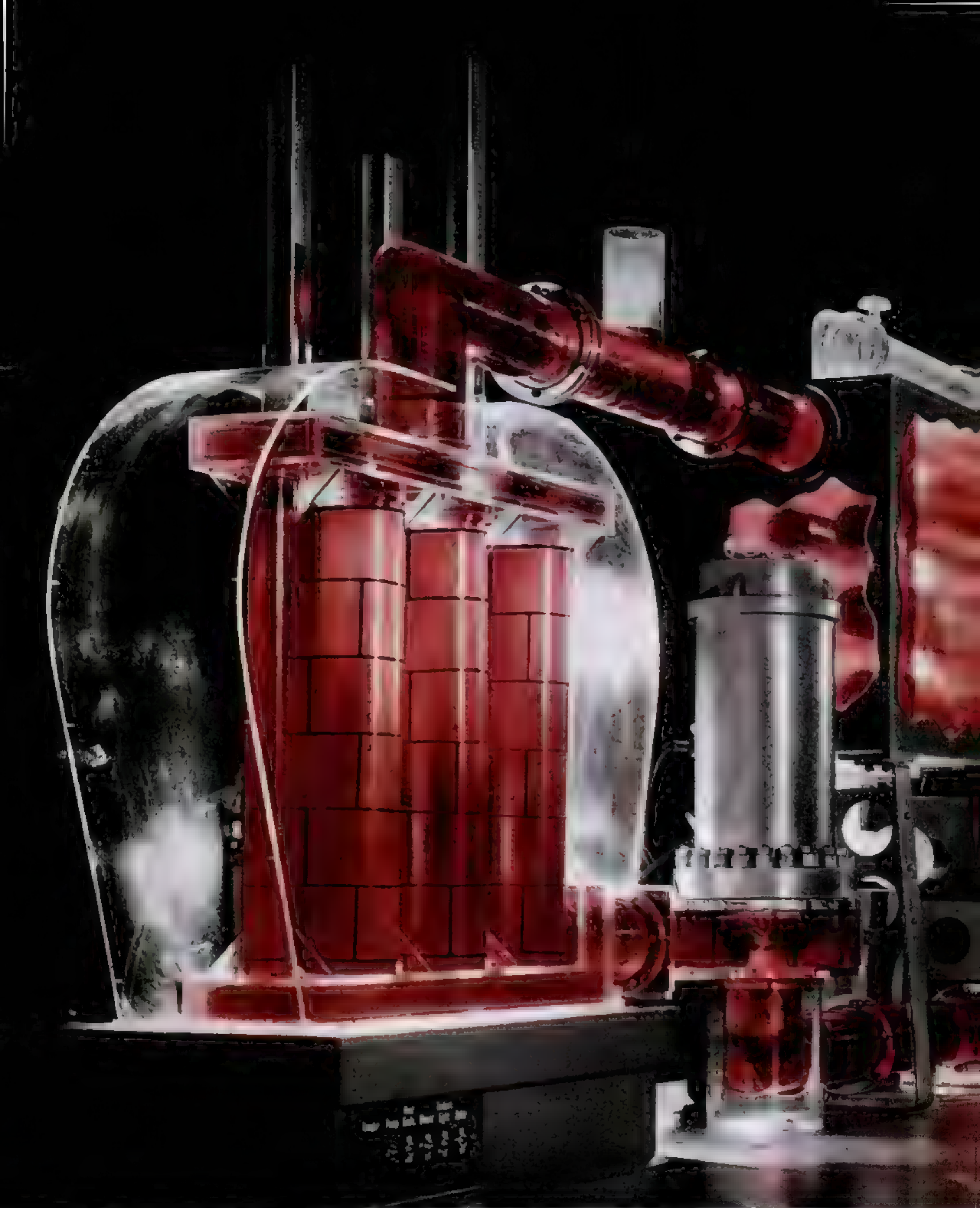


Extra water would be drawn off at night, stored in reservoir, used by generators during day when more energy water could be taken directly from river without spoiling scenic beauty of falls. A real single water tunnel will bypass rapids down

river from falls. New weirs and excavations at lip of falls will help keep falls looking the same. House of Representatives has approved private development of U.S. works, although Senate may push for New York state or federal ownership.

NEWEST HYDRO GIANT IS ONE MILLION KILOWATT CHIEF JOSEPH DAM ON COLUMBIA RIVER. AFTER COMPLETION IN 1958, IT COULD BE EXPANDED TO 1.7 MILLION KILOWATTS





FIRST ATOMIC POWER STATION, which Westinghouse is designing for AEC, will operate as shown by this 16-foot-long plastic model. Reactor's core is represented by tanklike bricked columns (*left*) above which protrude control rods,

Transparent wall represents chamber in which core sits. In core itself are fuel rods (see drawing, *right*), which undergo fission, and water (here a red dye solution), which, circulated under pressure by a pump (gray cylinder), carries heat of

THE ATOM: Age of nuclear power has arrived

In October of 1953 the official opening of a new age was announced by the Atomic Energy Commission. Nuclear energy was ready to be used to run U.S. electric generating stations, and, the AEC revealed, Westinghouse Electric Corporation had been chosen to design the first such nuclear installation for the government. When it is finished, about 1956, this atomic power station will turn out a minimum of 60,000 kilowatts, enough to supply the needs of a city of about 75,000 people.

Like any coal-fueled power plant, an atomic plant generates electricity by making steam in a boiler, using this steam to turn turbines which then turn the rotors of electric generators. In an atomic installation, instead of a firebox full of burning coal, a nuclear reactor is used to provide the heat for the boiler.

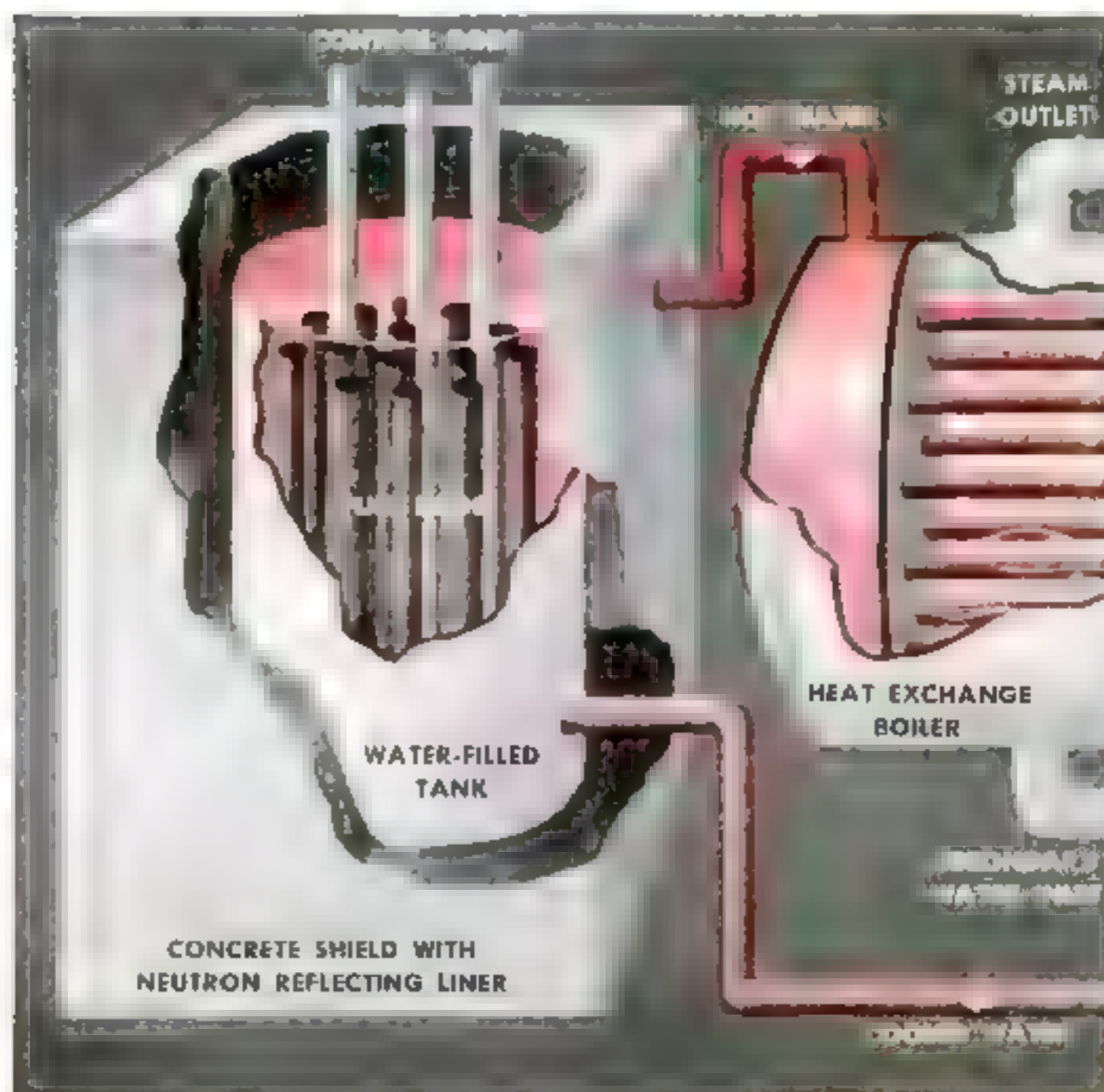
A reactor is a device which contains fissionable uranium or plutonium, which may be in such different forms as solid rods, liquid solution or a souplike suspension of particles, plus some kind of substance capable of regulating the rate of atomic fission so that it "percolates" slowly instead of exploding like a bomb. A certain proportion of the atoms in the reactor's fuel are always disintegrating, ejecting fragments of themselves. Some of these flying fragments are neutrons which hit other atoms, making them split and perpetuating a chain reaction. As each atom splits it gives off heat and the reactor's internal temperature rises to hundreds or thousands of degrees. This heat is merely piped off and run through a "heat exchanger" where it boils water.

Several power reactors are being developed. The British have one under construction, and U.S. industrialists are drawing up their designs (*next page*). But the U.S. power reactor nearest to becoming reality is the AEC-Westinghouse installation, whose design is shown in the simplified model at left and the drawing below. It will use its atomic fuel in the form of solid rods immersed in water. The water, which is kept under pressure, serves a double purpose. It is the coolant that circulates around the fuel rods and from reactor to boiler to transfer the heat. And it serves as the "moderator" which is needed to slow down the flying neutrons so that they will hit the fuel atoms at the desired speed.

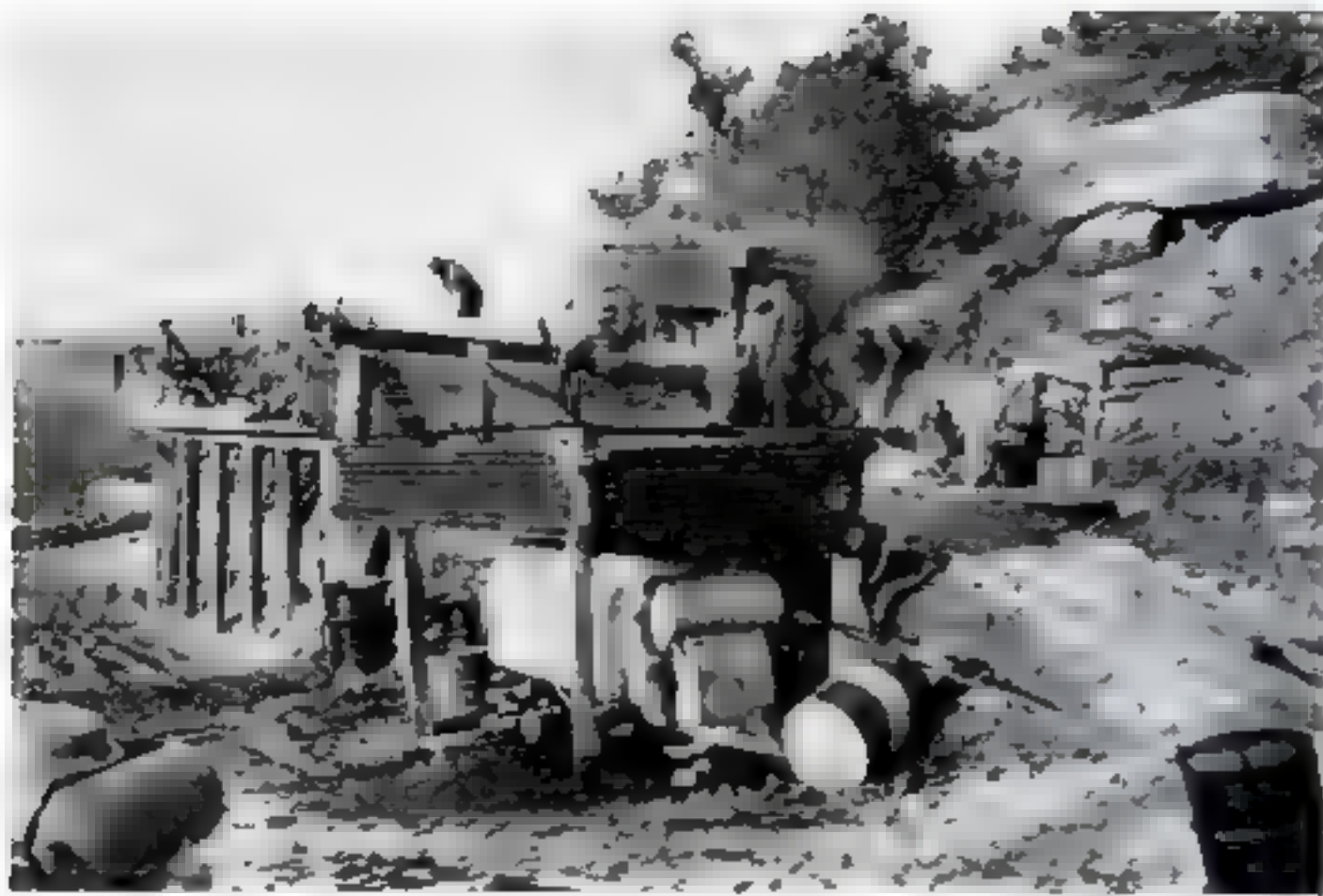
Unlike other power stations, atomic plants can be located anywhere. They can be built to almost any size, since usual limits of coal-pile size or stream head do not apply. Their use will forestall power shortages for centuries to come (*next page*). And inside the intensely hot, ray-filled interiors of privately-owned reactors, chemical companies may be able to perform hitherto impossible miracles of synthesis to make new materials.



fission out top of core to heat exchanger (center). There it runs through tubes surrounded by more water which absorbs heat and boils. Resulting steam (white pipe) turns a turbine and generates current which high voltage lines carry away.



REACTOR'S CORE consists basically of tank in which uranium fuel rods are immersed in water (red). Water slows neutrons emitted by rods, also carries heat of fission out to the boiler where it heats secondary water supply to make steam.



URANIUM MINE at Colorado-Utah border, a five-foot-high tunnel cut into a tiny hill, is run by five men. In six months of operation it has produced about 1,500 tons of ore containing 15 tons of uranium oxide, for over \$100,000 profit.

REACTOR DESIGNS VARY BUT ALL OF THEM ARE EXPENSIVE

The AEC has hundreds of different reactor designs. Some have been submitted by more than 60 chemical, power, engineering and equipment making companies that have been officially studying AEC data and are clamoring for a change in the Atomic Energy Act that would allow them to own atomic fuels. But before the atom can be turned over to industry, Congress must decide whether the government will buy all or part of the plutonium produced and must establish patent and security rules.

No atomic plant will be cheap to build or operate. Fuel costs themselves will be negligible, perhaps \$35 for a pound of uranium equivalent to 1,700 tons of coal. But every part of a reactor must be made to operate perfectly at high temperatures and, if possible, for the life of the reactor, for no repairman can enter its ray-filled interior. All adjustments must be made by remote control. If an important part goes out of commission, the reactor may have to be abandoned. The fuel, usually machined into rods and encased in aluminum, must be frequently removed, melted or dissolved, chemically repurified, then re-machined and re-cased before going back into service. Yet industrialists think that they could compete with coal-fueled plants.

Three types of power reactors (*above, right*) are most likely to compete with the water-cooled, water-moderated design shown on the previous page. The sodium-graphite reactor with tubular fuel rods, the type Monsanto Chemical Co. wants to build, is similar to atomic piles at Hanford, thus has predictable performance. The homogeneous type with fuel in liquid solution, a design tested in at least three AEC research reactors, eliminates fuel rod costs. The third type, which a group of companies including Detroit Edison and Dow Chemical propose to construct, has the important ability to "breed" more new fuel than it uses. In natural uranium only one atom in every 140 is the fissionable isotope U-235. The other 99.3% is nonfissionable 238. In the breeder U-238 is changed by radiation into plutonium, which is fissionable and acts like U-235. Breeding may ultimately be combined with features of other reactors (*right*) to supply all atomic needs and avert power famine for centuries to come.

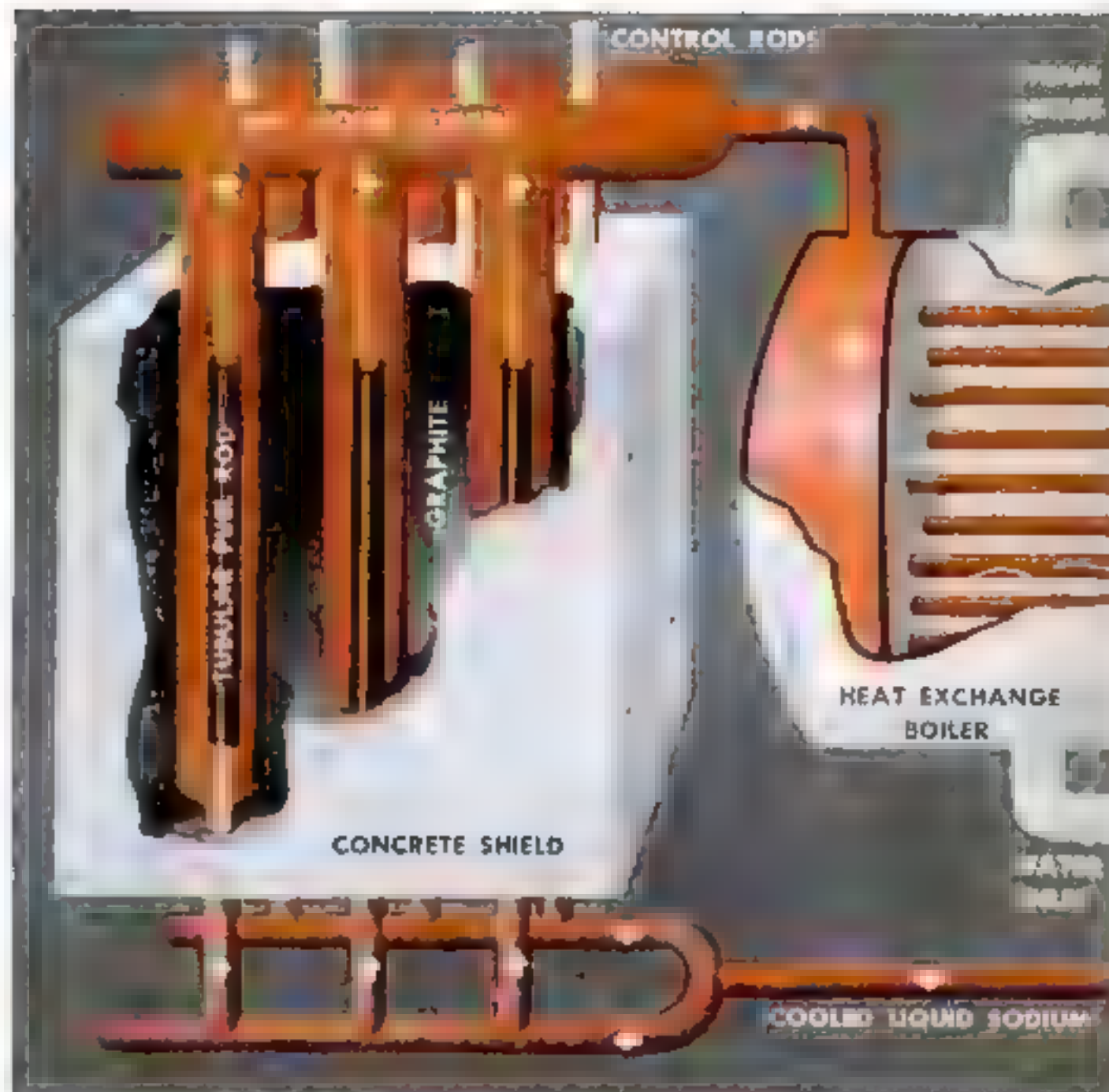
TOTAL ATOMIC RESERVES
EQUAL 87 TRILLION TONS OF COAL

WORLD COAL RESERVES:
3.3 TRILLION TONS

U-235
RESERVES EQUAL 600
BILLION TONS OF COAL



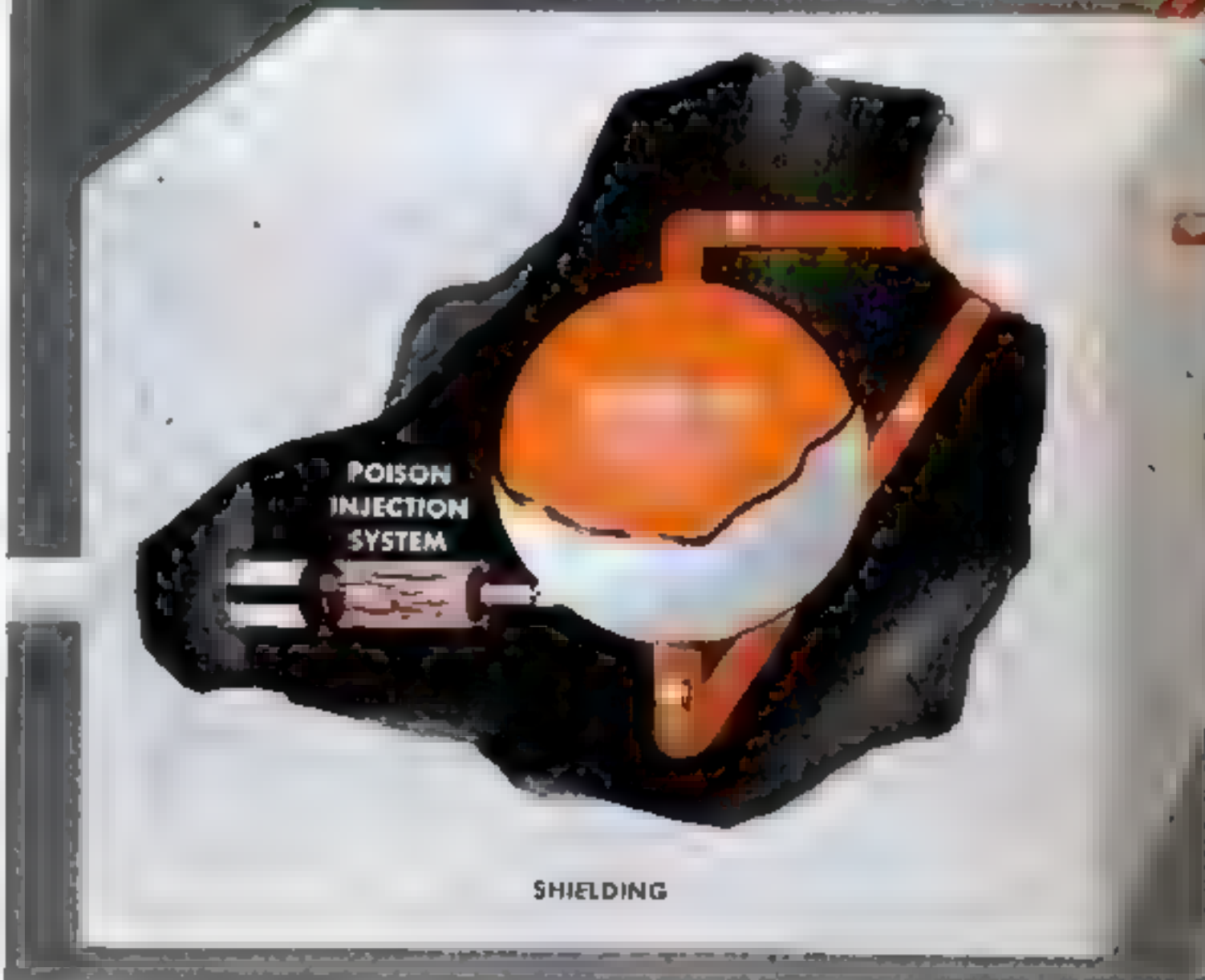
ATOMIC FUEL RESERVES, which in energy potential would equal only one sixth of recoverable coal reserves if U-235 alone were used, will be stretched to 25 times coal reserves by breeding U-238 and thorium to make fissionable fuel.



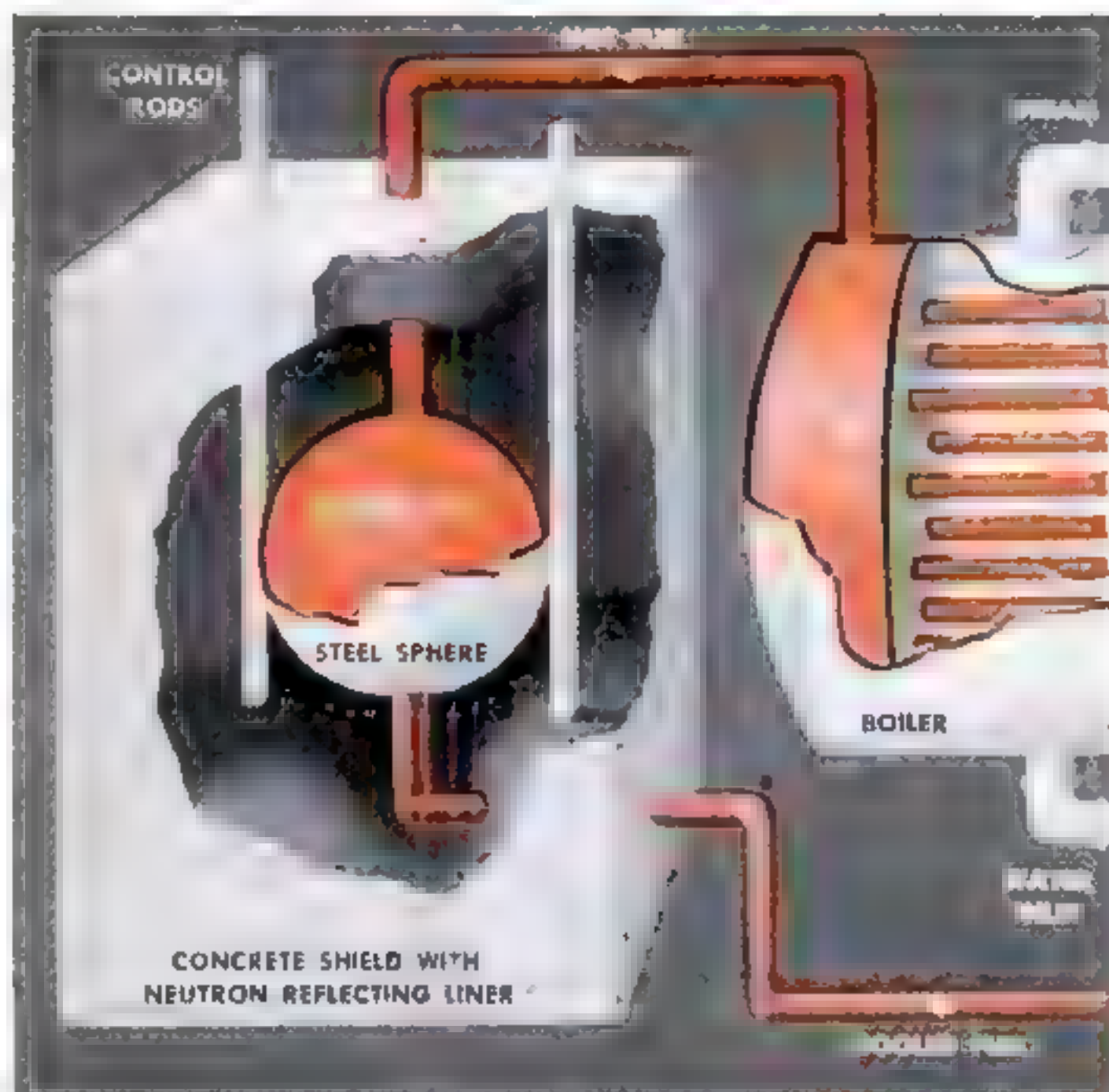
"SODIUM-GRAPHITE" REACTOR uses tubular uranium fuel rods lowered into channels of a graphite block through which liquefied sodium metal (red) flows to carry the heat out of reactor to boiler. Graphite reduces neutron speed.



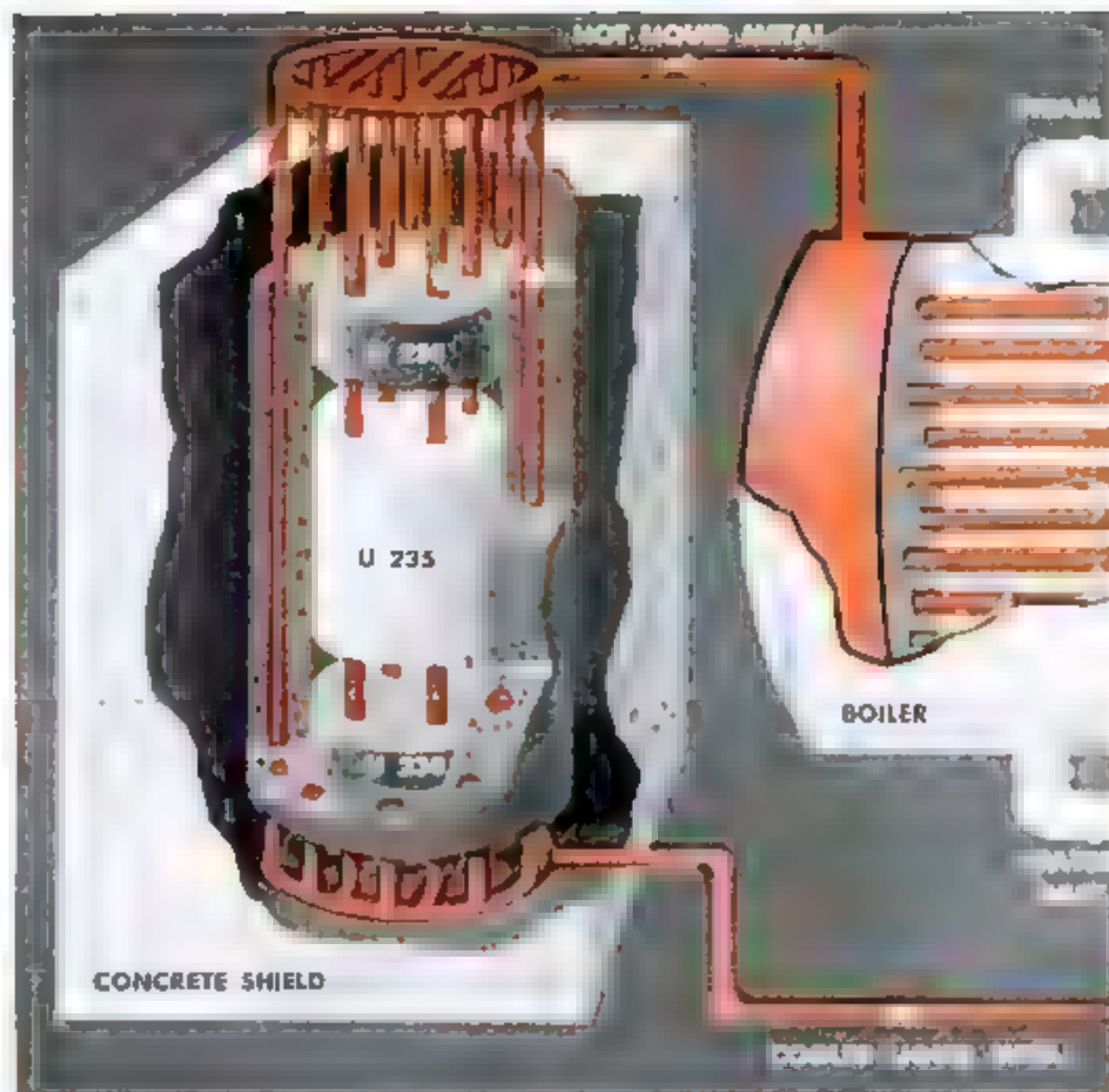
PLUTONIUM FOR MORE POWER STATIONS



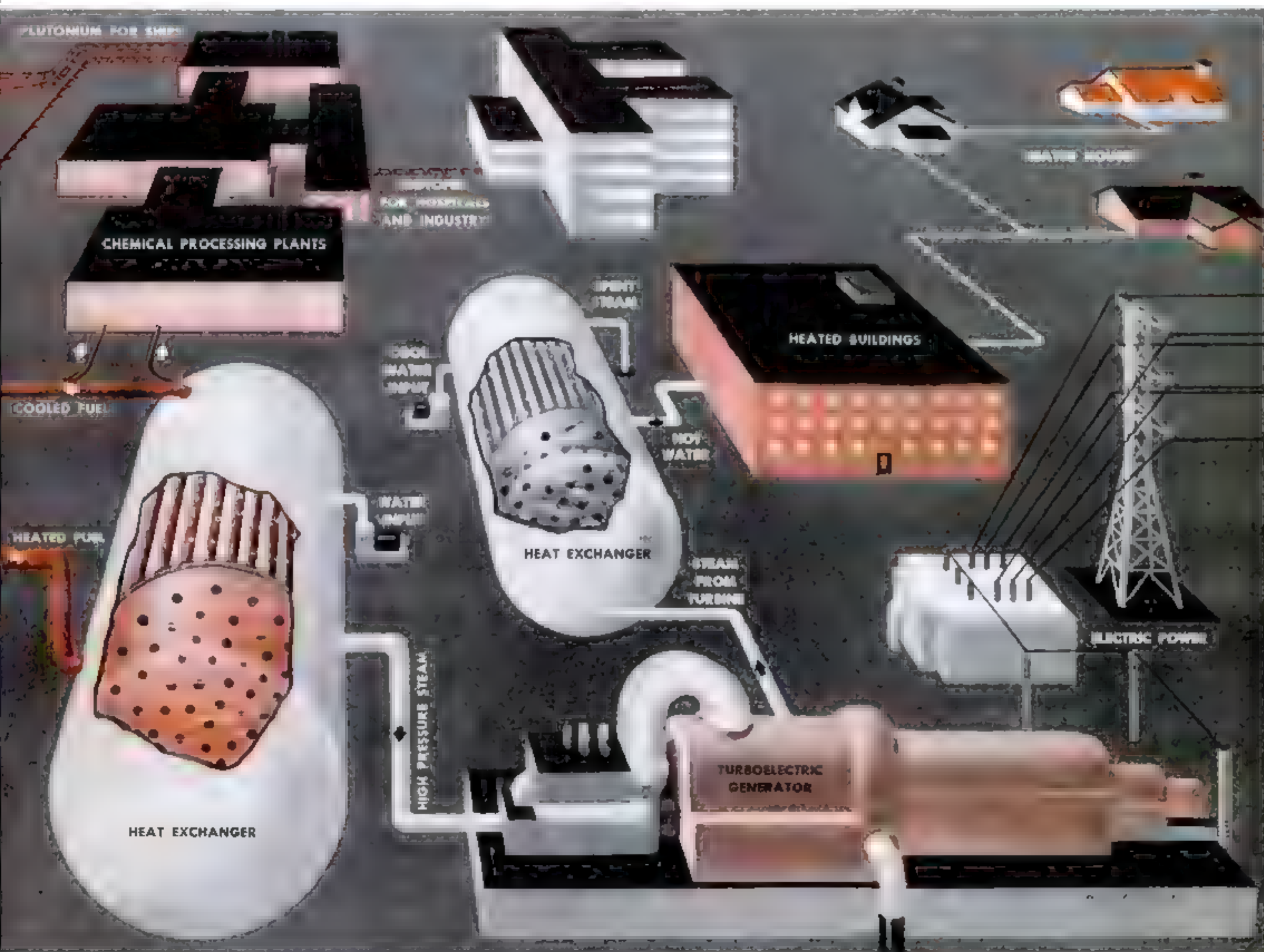
"DREAM CYCLE," an ideal ultimate nuclear system suggested by AEC's Dr. Lawrence Hafstad, would add convenience of homogeneous reactor's liquid fuel to fuel-stretching features of breeder. U-235 and U-238 dissolved in a liquid metal



"HOMOGENEOUS" REACTOR uses liquid fuel (red), a uranium compound dissolved in water, which is held in a steel sphere about size of a basketball. Fuel acts as its own coolant, circulates from core through heat exchange boiler.

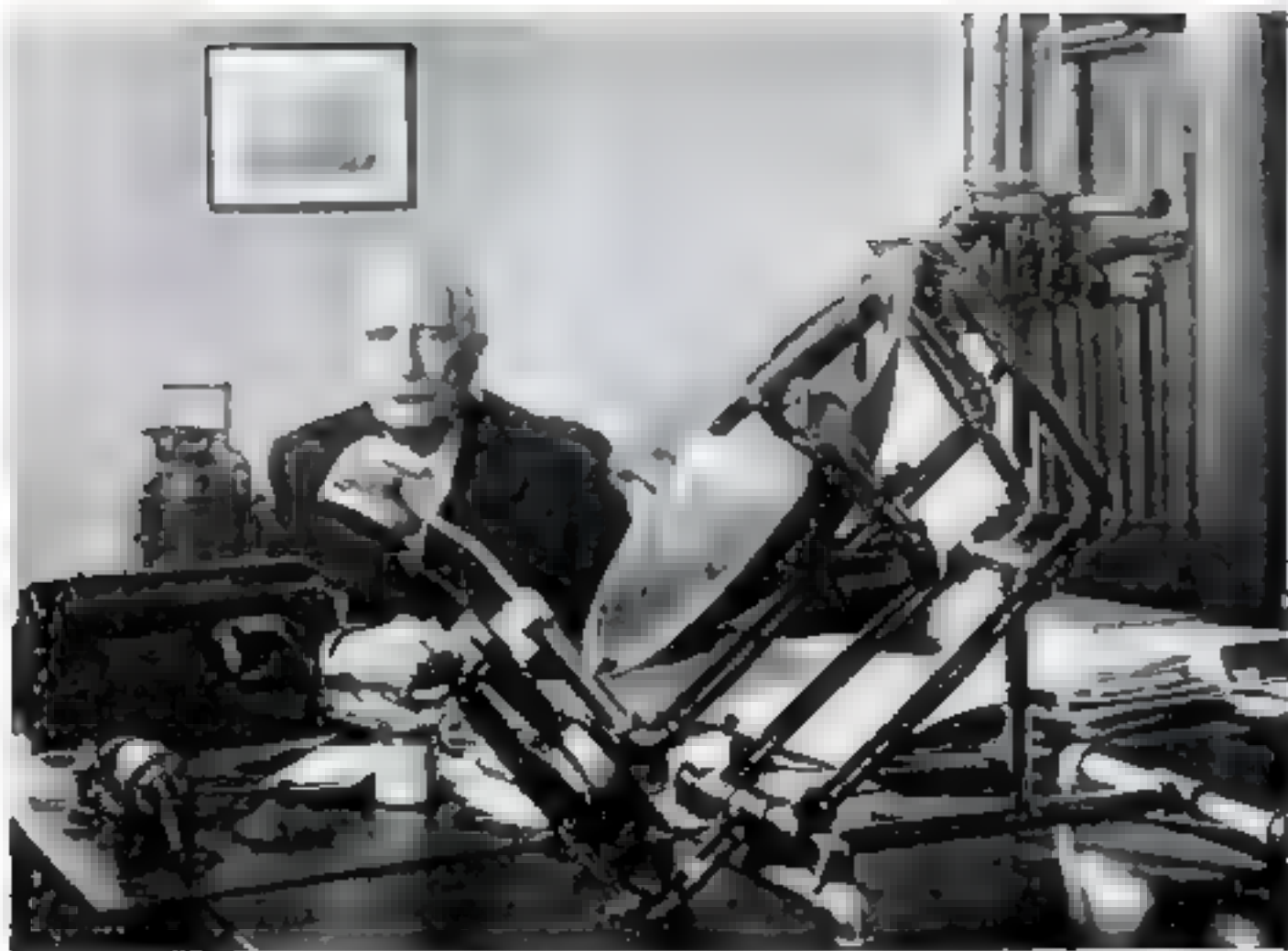


"BREEDER" REACTOR, which makes more fuel than it consumes, has a small core of fissionable U-235 surrounded by nonfissionable U-238 which the U-235 converts to fissionable plutonium. Liquid metal (red) carries heat to the boiler.



would react in sphere (left). Chemical "poisons," instead of control rods, would be means of controlling rate of fission. Fuel would run to boiler to make high-pressure steam for generator, then return. Steam, re-used, would make hot water

to heat buildings. Processing plants would continually drain off a fraction of fuel to extract excess poisons, useful isotopes, and plutonium to be used for ship fuel, bombs and a nearly endless chain of duplicate dream cycle installations.



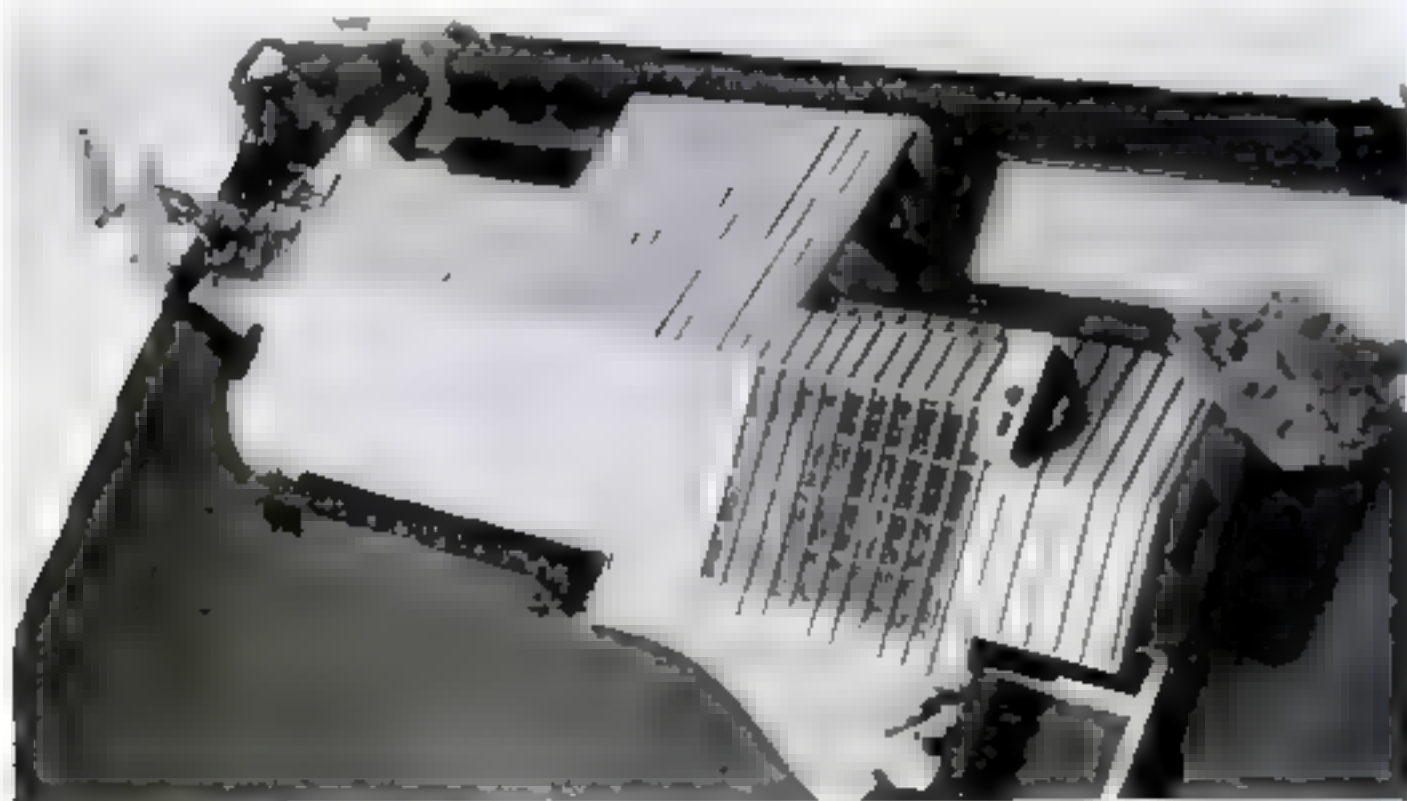
SOLAR REFLECTOR, a small machine designed by Dr. Charles Abbot of Smithsonian Institution, can collect sun's rays, focus them on tiny black tube (center) to boil some water. Large reflectors for power are now prohibitively costly.

THE SUN: Prophets study rays for far-off needs

Even before the first atomic power plant is ready, a few far-sighted scientists are dreaming of ways to save the U.S. when coal, oil, gas and uranium run out. That may be from 200 years to 1,000 years away. But these prophets—whose scientific reasoning inevitably leads them back to the patron sun which provides most of the conventional forms of energy

believe man should start planning now to develop a power station to run on solar radiation itself, and meantime husband reserves by heating houses with sunlight. Such a station might use mirrors, mammoth photoelectric cells, or chemical batteries that respond to light. But, according to Dr. Hoyt Hottel of M.I.T., the most practical way to turn the sun's rays directly into power seems now to be a flat-plate collection system.

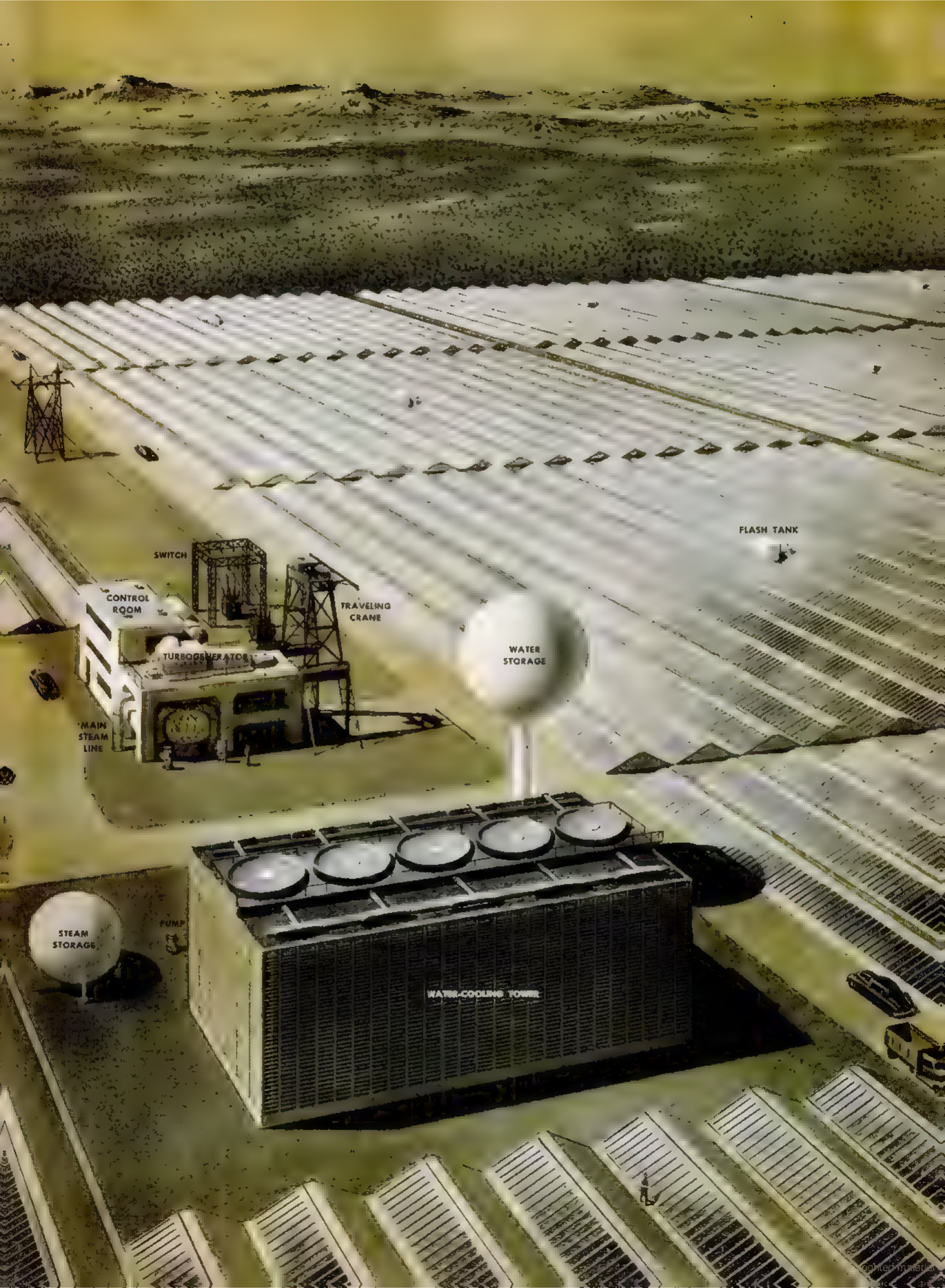
The drawing at right shows how Michael Larnoff, of the engineering firm El Paso Services, thinks such a system designed to supplement the power needs of El Paso would work. It would require 50 acres of glass sheets, four layers thick, under which water pipes would lie. The glass would hold the sun's warmth around the pipes until the water heated under pressure to 250°. When released into flash drums it would turn to steam. The steam would be piped into a conventional generating plant which could turn out up to 10,000 kilowatts. The cost of building such a station, even on cheap desert land, would make its power several times as expensive as that from an oil-fueled plant today. Yet it would work, and the U.S. will eventually build one unless a now unknown substitute is invented to fill the insatiable demands of the U.S. for energy and power.



SUN-WARMED HOUSES built with heat collectors on roof like model designed by Dr. George Lof for American Window Glass Co. can be used in sunny areas to save coal and oil. Heat from roof is stored in a gravel-filled closet until used.

A SOLAR POWER PLANT IN TEXAS DESERT WOULD LOOK LIKE A FIELD OF GLASS—▶





CONTROL ROOM

SWITCH

TURBOGENERATOR

TRAVELING CRANE

WATER STORAGE

FLASH TANK

MAIN STEAM LINE

STEAM STORAGE

PUMP

WATER-COOLING TOWER



TRANSISTOR INVENTORS John Bardeen, William Shockley, and Walter Brattain loom above their revolutionary Bell patented substitutes for many glass

vacuum tubes. They are pushing work on these tiny devices which will more and more radically shrink size and increase effectiveness of electronic equipment.



PROBLEM SOLVERS James Richardson and Nicholas Metropolis are working on tentfold increase in capacity of their computing machine at Los Alamos.

← **TUBE DESIGNERS** John Pierce and Rudolph Kompfner are perfecting Bell Laboratories' amplifier (on table) for relay systems, which may someday be used for simultaneously handling many TV programs



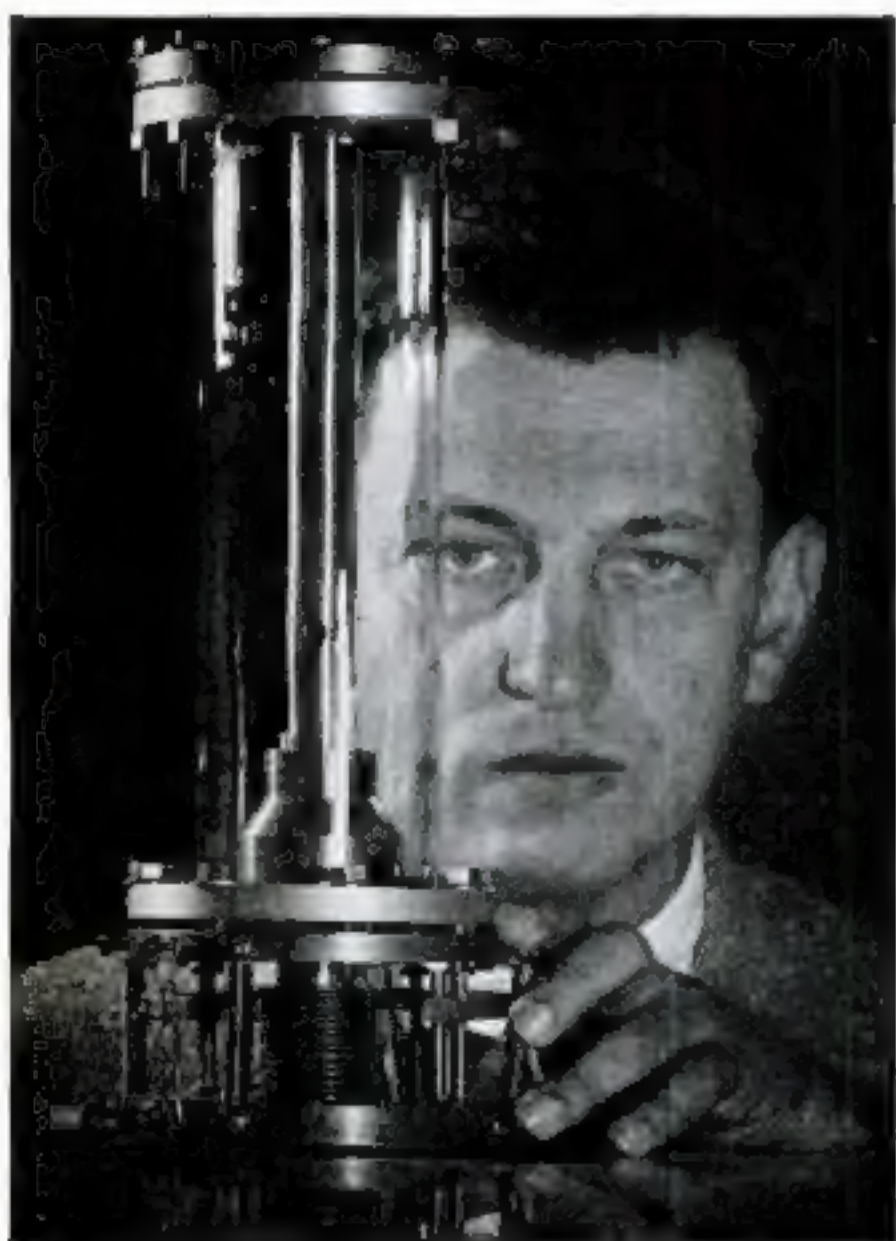
METER MAN Henry Kalmaus brandishes parts of his flow meter. When in commercial production, it will measure velocity of blood, air or even ocean liners.

THE FACE OF REVOLUTIONARY TECHNOLOGY

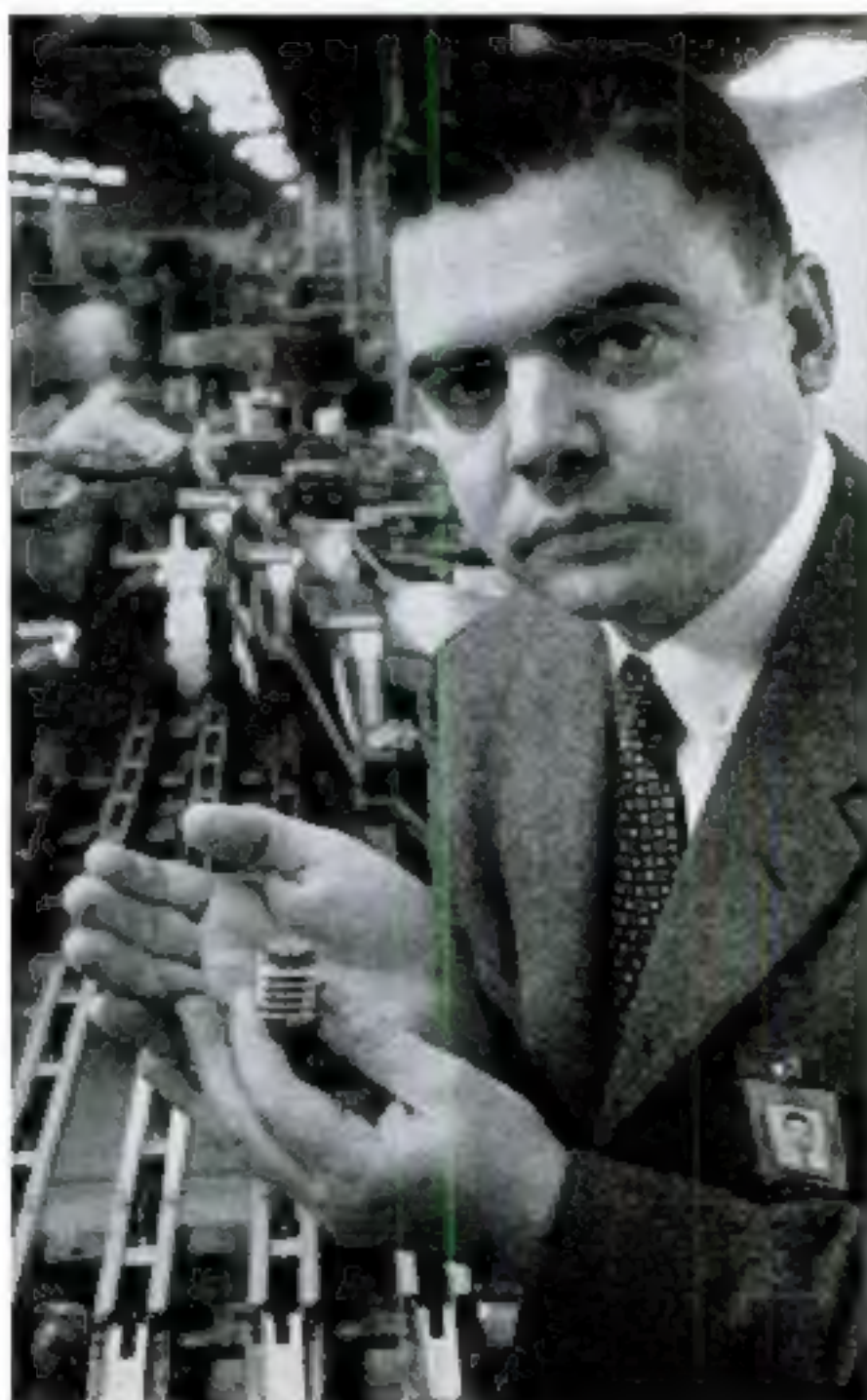
WIZARDS OF THE COMING WONDERS

The mark of genius and the hope of the future is on the faces of these pensive and little-known men, surrounded here by the Rube Goldberg gadgets of their profession. They are some of America's most brilliant scientists in the wonder world of electronics. Sometimes inventing in solitude, more often coordinating teams of specialists on complex research projects, they are riding the crest of the world's most promising technological revolution. Elec-

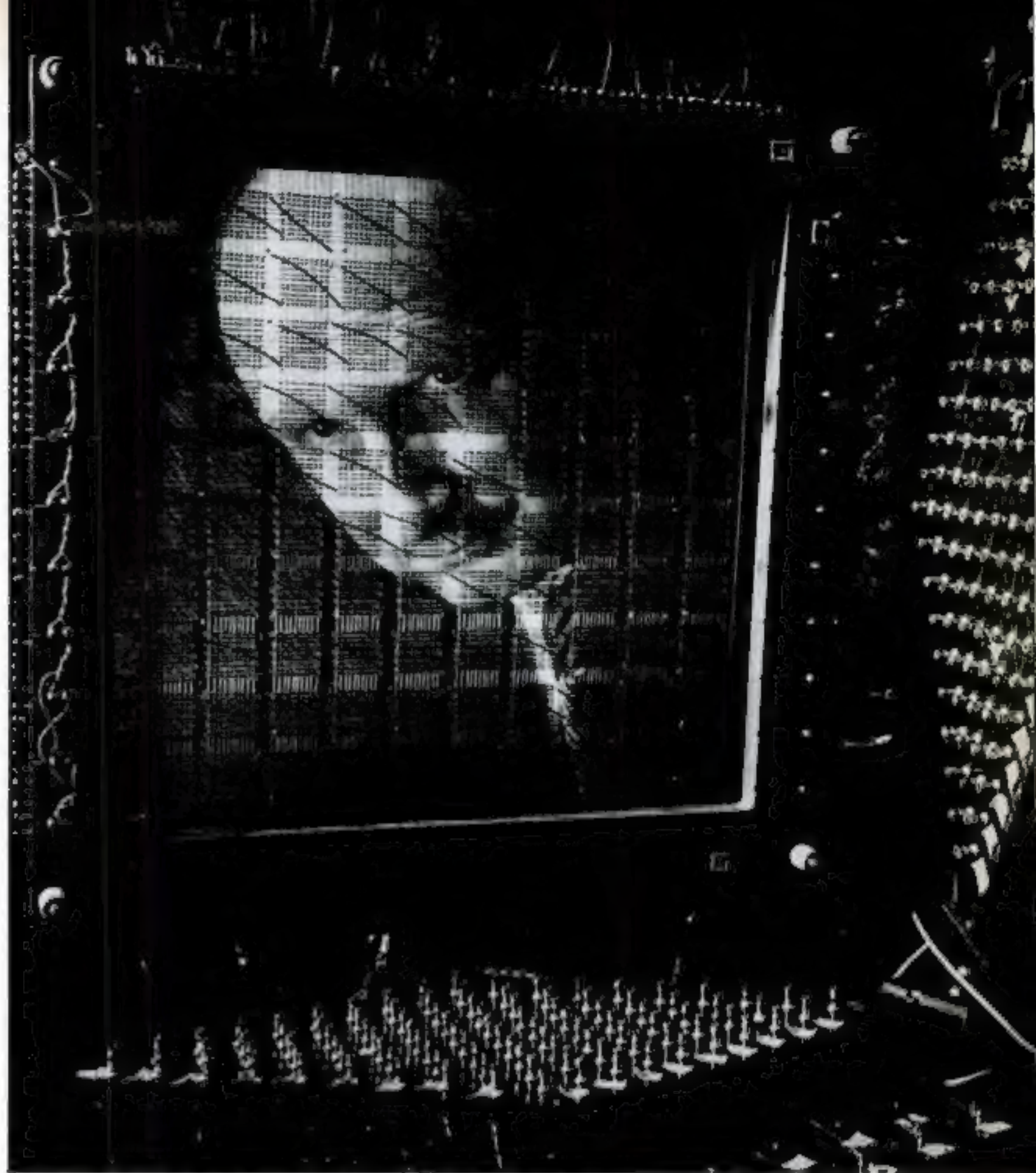
tronics, a \$5 billion industry in 1953, is directing most of its current research to military needs, but it promises civilians all manner of miracles from vest-pocket-sized radios and electronic cooking to better cancer therapy. Most important, with automatic factories and other work simplification devices, electronics holds the key to whopping increases in U.S. productivity, unlike anything dreamed of even in the stupendously productive last half century.



ATOM SMASHER Edward Ginzton, who helped develop world's most powerful linear accelerator for physics research for Navy, is building new version of the atom-smashing machine for cancer therapy.



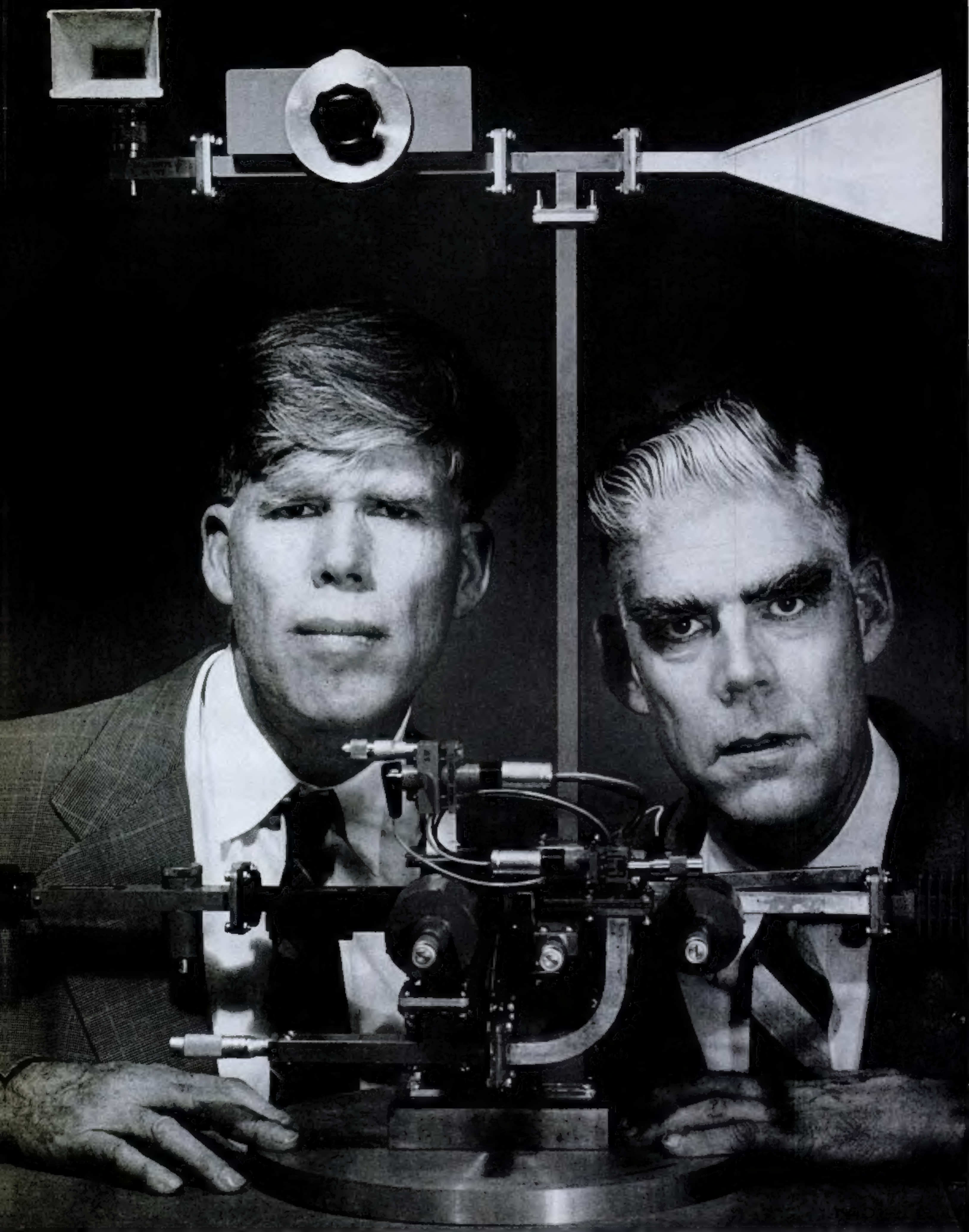
← **COST CUTTER** Robert Henry, whose designs for basic electronic parts greatly reduce hand labor, is perfecting machinery to mass-produce them. Here he holds one of units, put together like Tinker Toys.



MEMORY EXPERT Jan Rajchman peers through RCA device which "remembers" 10,000 bits of information. Eventually he hopes to have it store millions.



SPACE SAVER Clelio Brunetti, who helped develop printed circuit to replace bulky wiring and invented the world's smallest transmitter (right), continues to shrink size of electronic equipment.



BROTHER GENIUSES, Russell Varian, 55, and Sigurd Varian, 52, of Palo Alto, Calif., sit behind microwave paraphernalia, including the klystron tube, which they helped invent. The original tube, which made radar possible, has been constantly improved, providing a basis for microwave relay systems, naviga-

tion safeguards and many other devices not practical with longer wavelengths or lower frequencies. The Varians are now building a 75,000-watt klystron which will give greatest power known in the ultra high-frequency bands, where electronics will provide the most spectacular communications wonders of the future.



COMPANY DINNER, painted especially for Ballantine Beer by Ray Prohaska

Company Dinner at the Cook's tonight;
 Roast done to a turn, beer chilled just right.
 Our hostess has a heart of gold;
 She knows guests want beer good and cold.
 Her brand of course is Extra Fine . . .
 Deep-brewed-for-flavor Ballantine!
 Ice Ballantine Beer as cold as you will,
 This is the Flavor that chill can't kill!

BALLANTINE BEER

— with the Flavor that chill can't kill !



P. Ballantine & Sons, Newark, N. J.



There's this about Coke ...

"You trust its quality"



In hospitals, offices, stores . . . familiar
red coolers invite you to pause
for ice-cold Coca-Cola. When you do,
you know what to expect.
*Delicious flavor, unmatched in all the world--
wholesome refreshment, pure as sunlight--
unvarying quality that has made Coke the
overwhelming favorite of four generations.*

See **EDDIE FISHER** on "Coke Time"
NBC Television twice each week

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